



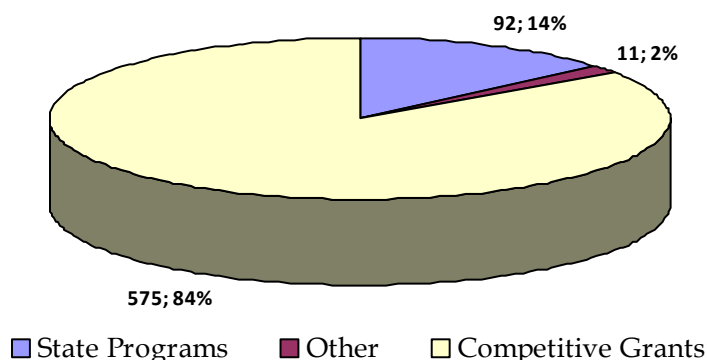
Fiscal Year 2017 Description of Funded Projects

Number of Grants Awarded: 56
Number of Sub-Projects: 678
Amount of Funds Awarded: \$60,591,349.33

For more information, please visit the grant program's website: <https://www.ams.usda.gov/scbgp>

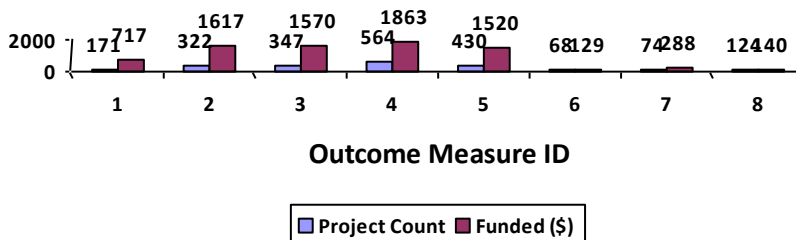
NOTE: The project descriptions below were provided by the grant recipients. (File updated October 25, 2017)

Project Delivery Types



State Program	The proposal illustrated that the State department of agriculture planned to administer the project and/or a competitive grant program was not conducted.
Competitive Grants	The proposal demonstrated that a fair and open competition was conducted and the project partner(s) are clearly involved.
Other	The proposal illustrated that project partners met with the grantee to determine project priorities, but an open competitive grant program was not conducted.

Project Outcomes



1/To enhance the competitiveness of specialty crops through increased sales; 2/Enhance the competitiveness of specialty crops through increased consumption; 3/Enhance the competitiveness of specialty crops through increased access and awareness; 4/Enhance the competitiveness of specialty crops through greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources; 5/Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems; 6/Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety; 7/Enhance the competitiveness of specialty crops through increased understanding of threats to food safety from microbial and chemical sources; 8/Enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development.

Alabama Department of Agriculture and Industries

Amount Awarded:

\$424,078.10

Number of Projects:

17

- Increase knowledge and accessibility of a nutrition-based agriculture system through the augmented production of Specialty Crops at King's Garden. King's Garden at King's Home supports area food efforts to increase the consumption of fresh fruits, vegetables and honey through education and by teaching "farm to table" techniques with King's Home residents and the community.
- E.A.T. South will increase the consumption and sales of Alabama Specialty Crops through: developing kitchen skills through cooking workshops to support adults in consuming more fresh fruits and vegetables; creating a farm to table curriculum for K-12 students; and assisting farmers by developing print and electronic marketing materials focused on nutrition and consumption of fresh fruits and vegetables to share through community and social media channels.
- Troy University will enhance consumption and access of specialty crops amongst school aged children through the expansion of two school garden sites and the creation and use of a school farm stands whereby profits generated will be reinvested to support our existing school garden programs to make this program economically self-sufficient.
- Auburn University (AU) the Alabama Cooperative Extension System (ACES) will assist Alabama container nurseries in improving irrigation efficiency by conducting an in-depth on-site assessment of irrigation practices in Alabama container nurseries, by identifying the adoption of best management practices among Alabama container nurseries through a survey, and by conducting irrigation management workshops and webinars which will use information attained from the assessment and surveys to target information that will be most beneficial to growers.
- The purpose of the Community Gardens program is to bring low income and often high crime neighborhoods together for a consolidated purpose of providing fresh fruits and vegetables to residents who otherwise would not be able to afford them. The garden will reduce family food budgets while producing nutritious food. The neighborhoods targeted for this program are Alabama Village, Mauvilla, and Chickasaw. Others may be added as green space is identified.
- Vegetable production in Alabama is on a rapid increase with over 1,100 producers participating in the farmers markets and retail sales exceeding \$70 million statewide (value added agriculture is worth another \$103 million). The Alabama Small Farm/Vegetable IPM program is the statewide educational program that benefits vegetable producers to save money by preventing pest outbreaks and crop failure with timely training and consultation. Since the first SCBG funds provided in 2010, this project has trained nearly 1,000 producers and market gardeners each year with direct assistance to new and beginning farmers; statewide impact analysis indicates a return on investment of 104:1 (\$104 return for every grant dollar provided). The current proposal aims at intensively focusing on veteran farms and low resource producer training through innovative educational technology. We request support for the beginning farmer e-curriculum as a 'Farming 101' certificate program. We will also update and re-print the very popular Alternative Vegetable IPM Slide Chart and High Tunnel iBook that are part of the basic toolkit for beginning farmers. This resource development will compliment extension small farm workshops at the regional and state level, along with on-farm support services that prevent nearly 50% crop loss and contamination. A support letter from veteran farmer has been attached separately for reviewers. Return on investment with the current proposal is anticipated to be 132:1 with net impact of \$3.3 million annually (statewide basis).
- The Alabama Nursery and Landscape Association (ALNLA) in collaboration with Auburn University (AU) and the Alabama Cooperative Extension System (ACES) will develop and demonstrate innovative ways to reduce the cost of weed control in the nursery. This project will develop and demonstrate new innovative methods for preemergent herbicide applications for nursery production. These application methods have the potential to improve efficiency of application by over 75%. This project will also provide training to over 200 Alabama nursery workers, improving their ability to make informed decisions about product selection, measuring efficiency and calibration. These outcomes will be accomplished by contracting with AU to conduct a series of experiments that will focus on equipment development and methods to improve grower's ability to rapidly evaluate their own application efficiency. ALNLA and ACES will conduct 3 workshops and 3 webinars on IPM strategies for weed control in the nursery, where the results from the AU study will be presented in conjunction with general IPM education.
- North Mobile County Food Park and Market will instruct and demonstrate to small and medium size growers' techniques to become more complete by extend growing seasons, and using cost effect non-conventional technologies for crop planting, conserving water, and managing land and energy resources by creating a hands-on demonstration project. Approaches and outcomes will be disseminated through grower meetings, field days (agritourism), speaking engagement and publications.

- The Alabama Fruit and Vegetable Growers Association (AFVGA) is a producer organization operating since 1979; membership has grown to nearly 300 members from various segments of the industry. The Alabama Fruit and Vegetable Conference is one of its premier activities generally attended by 250+ participants, especially new/beginning farmers. The conference and email contact lists have grown exponentially indicating a healthy growth in the fruit and vegetable industry statewide. The current proposal builds upon the past successful grant applications that helped specialty crop producers with intensive crop production training at the AFVGA Annual Conference, and reaching out to new producers via a new website (www.afvga.org). This proposal aims at expanding services to the specialty crop producers who will benefit from new learning opportunities at the conference and from a marketing campaign for raising consumer awareness of local foods led by the AFVGA. We have also included a request for funds for a basic phone application that will allow Alabama specialty crop producers and consumers to access local foods listings. Producers will also be able to input their information into the database for marketing purposes. We anticipate that the current proposal will have a short-term economic impact of \$3.5 million or more, as more beginning and experienced producers will utilize the networking opportunities at regional and annual events. The past return on investment has been 100:1 (\$100 return for every dollar granted); we anticipate the ROI to go up to 140:1 with the current proposal.
- Strawberries are a favorite fruit crop in southern United States and will enhance the competitiveness of Alabama's specialty crops due to their characteristic flavor and health benefits. Anecdotal evidence suggest an increasing interest in strawberry production among farm operators in the state but increased interest does not translate into a substantial increase in acreage devoted to strawberry production. Farmers need technological advancements in the form of well-adapted strawberry cultivars and effective crop protection practices to insure profitable production of strawberries in the hot and humid Alabama environment. The objectives of this project are to 1) improve strawberry production by introducing better-adapted strawberry cultivars and improve crop protection practices 2) raise awareness of higher quality and nutritional benefits of strawberry cultivars and 3) establish a strawberry best management practices (BMP) training curriculum for producers for immediate behavior change disseminated through a strawberry production guide. With this study, we propose to improve sustainability of strawberry production by developing new recommendations to the growers on effective pest management strategies, quality and health benefits of strawberry cultivars.
- This project will develop a three-hour workshop for preparing farmers to productively complete the Cornell University Produce Safety Alliance (PSA) Grower Training Course which is based on the Food Safety Modernization Act (FSMA). The target audiences are the small, limited resource, underrepresented minority, and military veteran specialty crop farmer communities in Alabama and surrounding states. Those farmers who successfully complete the workshop will be assisted in obtaining the materials for the PSA Grower Training Course. Also, in support of developing and implementing the course, an online question and answer (Q&A) database will be created with input from the farmers in the preparatory workshops as we address their needs. In addition, a series of fact sheets on various food safety topics will be developed and placed online for print-on-demand. As part of the project, three personnel will apply to become PSA Lead Trainers and we will expand our staff of personnel who have completed the PSA Train-the-Trainer Course from six to ten. The expanded staff of trainers will assist us in offering the workshops and achieving the output of more farmers attending the workshops with the outcome of having 100 of the targeted farmers to complete the PSA Grower Training Course.
- Alabama Cooperative Extension System/Auburn University and USDA-ARS will collaborate to evaluate weed control efficacy by cover crops and organic mulches in Alabama specialty crops (tomatoes and watermelon), with an emphasis of reducing herbicide reliance for weed management and weed control in organic production. High-residue rye and oat will be established in the fall and terminated in spring before vegetable transplanting. Wheat straw and wood chips will be applied to the plots that receive and do not receive early-season shallow cultivation. Weed control efficacy, marketable crop yield and net returns per acre of each treatment will be compared to standard chemical control program on flat ground, then best weed management practice will be identified at the end of study. The results of this study will be disseminated to growers and stakeholders through extension grower meetings, extension publications, e-newsletter, on-farm field days and Alabama fruit and vegetable grower conference. Findings of this study will assist Alabama specialty crop growers to better control weeds in their operation and to increase their sustainability, productivity and profitability.

- Auburn University will implement practical IPM tools to reduce resources of ornamental nurseries allocated to monitoring and controlling thrips. Result of this work will be disseminated at field days and grower meetings. The purpose of this project is to develop better monitoring and IPM tools for Chilli thrips management in Alabama production nurseries. This is a collaborative project between the Entomology and Plant Pathology Department at Auburn University and the Alabama Cooperative Extension System. This project is initiated because producers in south Alabama are enduring severe financial losses due to Chilli thrips. This work would take knowledge from different published research and apply those techniques to woody plant nurseries in AL. We will evaluate cultural controls, spray timing, different sampling techniques, and biologically-based insecticides to integrate management control options and reduce the likelihood for insecticide resistance. Experiments will evaluate insect populations, damage, and the costs of each new control method. These data will be summarized so that producers have cost estimates when considering these new tactics. The education component of this project will focus on educating growers about the biology and ecology of thrips and insecticide resistance management strategies.
- In order to maximize the dissemination and successful adoption of sustainable practices, the Alabama Sustainable Agriculture Network (ASAN) will convene growers, consumers, and other food system stakeholders for participatory education at a two-day Food & Farm Forum (December 2017), and will hold a pilot series of Tailgate Trainings to build skills and social capital among specialty crop producers (February-November 2018).
- The City of Birmingham and its partners such as: the Birmingham Public Housing Authority, Birmingham City Schools, Birmingham and Jefferson County Veterans Court, Alabama Urban Forestry Association, the City of Birmingham Department of Public Works, and the Professional Grounds Society will develop an acre plus community garden and orchard at Tuxedo Court Public Housing to teach participants how to grow Specialty Crops, encourage greater consumption of those healthy foods and create pathways to industry employment. An expansion of a smaller garden at W.C. Patton Park will add more fruit trees and ornamental flower displays. Both will teach students and community members about the economic, nutritional and operational value of Specialty Crops. Emphasis will be placed on production, improving diets and increasing technical skills of participants. Portions of the garden at Tuxedo Court will be made available to the participants for their individual use, the remaining harvest will be designated for large crop production for giveaway to deserving families. Large crops of collards, turnips, squash, Irish and sweet potatoes will be grown in a communal area, harvested and distributed
- Farmscape Solutions will facilitate collaboration among Alabama online farmers markets, provide an aggregation and distribution network, and supply local specialty crop produce and products to urban and rural communities. Alabamalowfood.com is as an online storefront for small and medium-scale specialty crop producers to vend their goods through all of our participant markets, significantly expanding their market reach, without sacrificing quality, because the farmer will have more time to spend on farm, rather than at market. Alabamalowfood.com will enhance the competitiveness of specialty crops through increased sales, consumption, and access to local products and produce. Specialty crop producers and consumers will improve local economies by keeping their grocery money among local communities.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Alaska Division of Agriculture

Amount Awarded:	\$212,533.15	Number of Projects:	8
<ul style="list-style-type: none"> • Arctic Alaska Peonies Co-operative will reduce the cut stem rejection rate of peonies brought to a pack house through the implementation of a standardized post-harvest handling procedure and a temperature and RH monitoring and reporting system. We will, also, mitigate the in-chiller spoilage because of botrytis development using a research based pack house environmental treatment process involving the use of Ozone treatment. • The Homer Soil and Water Conservation District will conduct a market survey of local restaurants and institutions to identify the basic characteristics, needs, challenges and strengths of our market for local specialty crops that can then be shared with producers, consumers and agencies actively working to improve the local food system. • Palmer Soil and Water Conservation District and its farmer partners will evaluate the efficacy of buried soil moisture sensors compared to the traditional tensiometer method of measuring soil moisture by placing the instruments side by side in various vegetable fields and monitoring the soil moisture readings on a weekly basis. Additionally, recording soil moisture sensors will also be installed to develop soil moisture curves, the initial data from which to base an irrigation scheduling program on. 			

- The Fairbanks Soil and Water Conservation District (FSWCD) will assist local specialty crop farmers in planning to expand their markets by conducting a feasibility study for a centralized cold storage facility designed to address the following issues: logistical elements associated with centralized cold storage; assessing the technical assistance and services needed by farmers; assessing which legal structure/business concept (nonprofit, for-profit, or producer cooperative) is most amenable to farmers' needs; and sharing how the Food Safety Modernization Act (FSMA) will affect aggregation efforts in the future.
- Kenai Soil & Water Conservation District will help small-scale specialty crop producers, and gardeners who are scaling up, develop working relationships with prospective markets and customers, and increase understanding of on-farm food safety practices, by organizing a variety of networking events throughout the year culminating with a Small Farm Showcase bus tour.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Alaska specialty crop producers have had difficulty accessing restaurants as an outlet for their products. Restaurants are used to sourcing products from their wholesale distribution centers and making any extra or new effort to source locally has not been the trend. As the number of Alaska Grown specialty crop producers continues to rise it is important to develop new markets and outlets for the products. The Restaurant Recognition program provides a system for restaurants to get recognized for utilizing Alaska Grown specialty crops. Funding will solely be used on specialty crops. When a restaurant signs up for the program we will assess the Alaska Grown products they utilize and if they carry any non-specialty crop we will use state general funds to cover supplement the budget for the relevant percentage. All the advertising and supply material will only use specialty crop imagery.
- Alaska Grown specialty crop producers are popping up with more frequency in rural Alaska. Offering technical assistance to rural specialty crop producers can be a challenge due to travel costs and community specific needs and barriers. We have strong partnerships with the University and other state agencies but we often lack the context and understanding of specific processes and growing conditions that takes place in these rural locations. To enhance the competitiveness of Alaska Grown specialty crops in rural locations, the Division requests program funds to travel to priority rural locations where we know specialty crop production is occurring with multiple growers. We work with community contacts to identify specialty crop technical assistance priorities and send out relevant staff.
Preliminary inquiries have demonstrated a need for an increase in produce safety training, soil and compost education, fruit and vegetable expertise, and closed environment farming education. Priority locations have been chosen based on community member's requests for technical assistance and market outlet opportunities.

American Samoa Department of Agriculture

Amount Awarded:	\$238,703.78	Number of Projects:	1
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- The American Samoa Government Department of Agriculture (ASG DOA) aims to modernize and update local specialty crop distribution systems to support import substitution efforts and early stage export activities. To further build upon the efforts underway to significantly improve production levels or specialty crops, taro in particular, ASG DOA will focus on improving the distribution system to ensure specialty crops (taro) make it to the consumer with quality intact and pricing within current acceptable market ranges. ASG DOA plans to accomplish this through utilizing proven six sigma methodologies, using data driven decision making processes.

Arizona Department of Agriculture

Amount Awarded:	\$1,145,987.80	Number of Projects:	20
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- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The Arizona Department of Agriculture's Agricultural Consultation and Training (ACT) division will offer and provide a certification fee, cost share reimbursement program for fresh fruit and vegetable producers/growers, distributors, wholesalers and handlers that become USDA GHP/GAP certified.

- The Arizona Nursery Association (ANA) will use these grant funds to update, enhance and improve the Arizona Certified Nursery Professional program to increase industry knowledge which in turn will lead to a better educated workforce. ANA is also planning, in this online process, to improve the test with a more streamlined version, which will be used to meet a new movement within the vocation agriculture community to graduate students with a certification in order to have a better chance at achieving employment in the industry. To accomplish this, ANA will deliver an on-line training and certification program for nursery professionals and high school.
- Arizona Farm Bureau will educate the public about Arizona specialty crops by developing a standards-based curriculum package and social media campaign to highlight the importance of specialty crops to our state's economy and our everyday lives.
- The Yuma Fresh Vegetable Association will increase consumption of specialty crops through the Farm Fresh Forks program, a specialty crop tasting experience at a minimum of 4 local Yuma restaurants.
- Randy Murray Productions will create a series of iconic videos on eating locally grown foods that consists of 10-20 short webisodes adaptable to many social media distribution platforms (Facebook, Instagram, etc.). Using fast-paced editing, easy-to-see close-ups, upbeat music and easy-to-read graphics with crisp narration, each episode tells the story of a single food 'from seed to supper.'
By visually pairing production with preparation, the series makes the connection between Arizona specialty crops and the consumers' own dinner table.
- The Arizona Department of Education, Health and Nutrition Service's (HNS) will strengthen the work of school gardens throughout the state of Arizona and enhance the competitiveness of specialty crops in Arizona by preparing students for a career in agriculture through the experiences offered in connecting agriculture to the classroom. HNS will award twenty schools funding for school garden projects that aim to identify and resolve barriers to the longevity of gardening programs in Arizona. In addition, this work will offer a structured learning environment for school garden leaders across the state by way of a facilitated mentorship program along with tailored trainings that will feature grant program participants. Each grant participant's program will be studied throughout their grant cycle to help identify and address barriers that lead to ineffective program development. By year two, lessons learned will be outlined in a how-to-guide that will be drafted in partnership with grant participants, experts in Arizona's specialty crop industry and those that have fostered work in school gardening to date. The investments made in this project will provide immeasurable returns.
- The Arizona Department of Agriculture's Agricultural Consultation and Training (ACT) division will offer and provide one-on-one assistance to fresh fruit and vegetable producers/growers, distributors, wholesalers and handlers so that they can become USDA GHP/GAP certified. This assistance program will provide benefits to those producers looking to address food safety concerns of their customers. These funds will be used for a GHP/GAP Coordinator to expand upon the education and outreach efforts of the current GHP/GAP Certification Training Program and to provide "one on one" assistance to training participants as needed to develop GHP/GAP procedures. ACT is taking GHP/GAP training to the next level by becoming involved with the Sun Produce Cooperative, which grew from the Maricopa County Arizona GROUP GAP Project. This project is to incorporate the small growers of Maricopa County into a collective food safety assessment and certification system permitting these growers and producers to expand their operations and markets. The growers realize that certification from AMS is crucial to their fulfillments. ACT will serve as food safety training lead and consultation for this GROUP to individual GHP/GAP plans, when required.
- Ajo Center for Sustainable Agriculture will implement a comprehensive outreach programming to increase awareness, access to and knowledge of production and consumption of the draught-tolerant and highly-nutritious heirloom crops of the Sonoran Desert by implementing a multi-tiered growers-, citizen- and organization- participation crop preservation program including community outreach and education, organizational outreach and education (train-the-trainer), preserving the genetic stock, revitalization of the dry-land "ak chin" farming, and sharing best practices with other growers and communities through an on-line resource library, social media campaign, and growers networking opportunities, including the annual AZ Small Producers Forum organized in collaboration with Local First Arizona.

- This project will be conducted by researchers at the University of Arizona and is focused on advancing commercial production of specialty mushrooms in Arizona. The current proposal is an extension of efforts funded through a 2015 SCBGP award, which was focused on two objectives: 1) conducting mushroom production workshops statewide and 2) conducting research toward optimizing specialty mushroom production in Arizona in controlled environment facilities. Both objectives were completed during the previous funding cycle. Exit surveys from the workshops revealed highly favorable reviews and included a series of grower recommendations covering critical areas of research and support needed over the next 5 years to advance and improve commercial production in Arizona. Based upon these recommendations, objectives for the current proposal include 1) evaluation of mushroom strains and techniques for high production during summer when production can decrease, 2) develop additional workshops specific to particular mushroom types and techniques (focused-content workshops), 3) continue expansion of the Arizona Mushroom Growers Association and Association's website and newsletter, and 4) develop modular systems for multi-point control of environmental parameters critical for profitable mushroom production (temperature, humidity, and CO₂). PI Pryor will be responsible for project administration/reporting, and will direct research on production optimization for different areas of Arizona and seasons. Co-PI Kacira will develop modular systems that can concurrently monitor and adjust key environmental parameters for optimal mushroom production. Co-PI Sparks will have responsibility for workshop organization and delivery, and for continued development of the demonstration Mushroom House and outreach content at Tucson Village Farms.
- Dr. Glenn Wright of the University of Arizona, in cooperation with several AZ olive growers will, for the 2nd year, determine basic irrigation and fertilization information for the local industry. This includes calculation of crop evapotranspiration (ET_c) and monthly leaf nutrient levels. In addition, an experiment will be conducted to determine if enhanced phosphorous (P) fertilization will lead to improved fruit set and productivity.
- The University of Arizona will address grower concerns about the utility and accuracy of FSMA-recommended methods for E. coli detection in irrigation water using an intra-laboratory methods comparison and an economic analysis, and will disseminate the results to stakeholders through training meetings, professional workshops, and a guidance document made widely available through the University of Arizona extension publication system.
- Blister Beetles are a highly diverse group of agriculturally and medically important insects, with nearly 150 species occurring in Arizona. They can feed on specialty crops, including spinach, weeds, and other plants in and around specialty crop fields. Blister Beetles are of concern due to the presence of the toxic chemical cantharidin within their bodies, which can cause illness, and potentially be lethal, if ingested. Accurate identification of these beetles is critical to identify blister beetles occurring in specialty crops. An in-depth review of Arizona blister beetles was last published in 1966. The University of Arizona Insect Collection (UAIC) and CALS Cooperative Extension Insect Diagnostics Clinic is updating species records, distributional data, host plant records including specialty crops, life-history data, digitizing the UAIC's extensive blister beetle collection, and updating our knowledge of these beetles within Arizona and adjacent regions of the southwest. We will provide specialty crop producers with scientific information to minimize health risks and potential economic losses. Expected outcomes of this project are to enhance the competitiveness of specialty crops in Arizona by: (1) developing educational resources for specialty crop producers and pest managers, enabling accurate identification of blister beetles, including species occurring in specialty crops (spinach, leafy greens, etc.) that can poison humans; (2) working with the Arizona Pest Management Center and Cooperative Extension personnel and networks to promote blister beetle education and availability of these resources; (3) providing diagnostic support for specialty crop producers by promoting CALS Cooperative Extension Insect Diagnostics Clinic as a resource.
- The University of Arizona (John Palumbo) will enhance the competitiveness of specialty crop production in Arizona by developing scientifically-based approaches and tactics for preventing and effectively managing diamondback moth infestations in Arizona cole crops. Specifically, research will be conducted to track the presence and status of DBM in Arizona cole crops over the next two years through a surveillance program of year-round pheromone trapping and early season transplant inspections. The data generated from these activities, along with previous data, will serve as a baseline for seasonal DBM activity that can be used to indicate outbreak status of DBM populations. In addition, the efficacy of important foliar and soil applied insecticides will be monitored in field trials, and baseline susceptibilities (LC₅₀s) for other important products will be generated in laboratory bioassays. These data serve as a biological indicator of insecticide resistance in a DBM population and can be used to alert PCAs and growers of potential problems, along with essential information for making cost-effective control decisions. Educational information derived from this project will be shared with growers and PCAs through UA Cooperative Extension educational meetings, field demonstrations, and periodic updates and electronic technical publications/fact sheets.

- The University of Arizona, Yuma Ag Center will enhance the competitiveness Arizona vegetable growers by further developing and maintaining a robust Integrated Pest Management (IPM) program that provide growers, PCAs and Agribusinesses with objective and unbiased information on new pest control technologies essential for the economical and environmentally sound production of high value, vegetable crops in Arizona. The objective of this project is to further enhance IPM knowledge through an extension outreach program that emphasizes the development, validation, and delivery of real time and relevant information and technologies to growers and PCAs for managing insects, plant diseases and weeds in Arizona vegetables. This project proposes to synergize vegetable IPM education in Arizona by strategically investing in an extension educator that will assist a core team of Extension Specialists and Agents in delivering and demonstrating new IPM technology throughout Arizona vegetable production systems. Educational information developed during this project will be shared with growers and PCAs through the electronic UA Vegetable IPM Updates, UA Cooperative Extension educational meetings, field demonstrations and technical publications/fact sheets.
- The University of Arizona's Yuma Center of Excellence for Desert Agriculture (YCEDA) will work with the UA Cooperative Extension Service (CES) researchers and lettuce production industry partners in Arizona to perform 2 years of field trials and analysis of promising strategies to mitigate the serious problem of Fusarium wilt of lettuce. The field trials will include both commercial and experimental lettuce cultivars; chemical and biological crop protection products including bio-fumigant crops; management strategies; and laboratory analysis of diseased soil. Results will be widely disseminated to the Arizona lettuce production industry to help them with planting and management decisions through both YCEDA and CES channels.
- The University of Arizona researchers will reduce produce cross-contamination by preventing biofilm formation on produce contact surfaces using plant-based sanitizer microemulsions and will inform produce industry via meetings and other outreach activities. Increasing incidences of produce outbreaks indicate the need for better prevention measures to avoid contamination by foodborne pathogens both pre and post-harvest. Foodborne pathogens can attach to surfaces in produce processing facilities along with native plant microbiota and form biofilms. Biofilms improve bacterial persistence, thereby increasing possibility of cross-contamination of produce and contact surfaces. Bacteria in biofilms are resistant to sanitizers. Conventional sanitizers (oxidizing agents) are often ineffective in water containing high organic burden or biofilms. An ideal sanitizer should prevent biofilm formation and deliver antimicrobial action irrespective of organic loads. Plant-based antimicrobial microemulsions could reduce bacterial attachment, and exert antimicrobial activity without being affected by organic loads. These sanitizers could prevent cross-contamination, biofilm formation and produce outbreaks. The goal of this project is to evaluate plant-based antimicrobials for their ability to prevent biofilm formation by foodborne pathogens, *Salmonella enterica* and *Listeria monocytogenes* on various produce contact surfaces such as stainless steel, high density polyethylene, polycarbonate, polyvinyl chloride, and Buna N-rubber. Coupons of various contact surfaces will be pre-treated with plant-based sanitizer microemulsions and subject to biofilm development by *Salmonella* or *Listeria* in the presence and absence of native microbiota. The ability of foodborne pathogens to form biofilms on sanitizer treated contact surfaces will be evaluated. The results will help improve produce safety by preventing cross-contamination by pathogens.
- The University of Arizona proposes to continue studying the residuals of neonicotinoid insecticides in honeybee and its products. Pesticides have been targeted as potential factors contributing to the decline of honeybee populations. As a relatively new group of systemic Insecticides, neonicotinoids are suspected as potential contributors to the decline of honeybee colonies. Our preliminary results from ongoing project suggested the presence of traces of neonicotinoid pesticides in honeybee workers, pollen and honey. Quantitatively, higher amounts of these traces were found in the pollen sampled from within the hive. Pollen stacking in storage and brood frames is usually from different plant sources over several forage trips. This allows for higher honeybees exposure to neonicotinoid insecticides. We propose to identify the pollen, collected by worker honeybees, to their corresponding plant sources. This would shed some light on which plant(s) would serve as the major contributor(s) of neonicotinoids contamination. It would also clarify whether the pollen-source plant(s) is/are non-cultivated or cultivated plant crop(s). Previous 2016 study in different region indicated that pollen from crop plants, represented only a small fraction of the total diversity of pollen resources used by honeybees, with the principle sources of pollen originating from non-cultivated plants. This proposed project aims at analyzing neonicotinoid residues in pollen collected by foraging honeybee workers from different sources. The major outcome is to provide different levels of government officials, industry and the public scientific-based information on this controversial issue to inform any decision regarding this group of insecticides.

- The University of Arizona will work with the Arizona Department of Agriculture (ADA) Environmental Service Division to maintain ongoing access to verified and improved pesticide use data, for the benefit of Arizona specialty crops industries. The expected outcome of this project is the continued availability of verified, quality pesticide use information for the benefit of specialty crops stakeholders to be used to complete the following tasks: (1) to develop effective responses to Environmental Protection Agency (EPA) calls for open comments on pesticide registration issues and other federal requests (e.g., USDA) that impact specialty crop production in Arizona; (2) to continue UA Cooperative Extension outreach targeting growers, pest management advisors (PCAs), distributor companies and other audiences, with the goal of improving pesticide use data quality, access, and awareness of how these data can positively impact Arizona specialty crops; and (3) to support research priorities of specialty crops industries as identified by our stakeholder advisory committee or other specialty crop industry leaders or organizations.
- The University of Arizona's Yuma Center of Excellence for Desert Agriculture (YCEDA) has teamed up with Dr. Charles Sanchez and Yuma Irrigation Districts, USDA, USBR, Arizona Commodity Councils, and others to measure water applied, evapotranspiration, and soil salinity levels in order to generate data that can be used to create irrigation management tools for various crops, not including spinach. With this project, we will perform this work for spinach. The objectives of this project are to measure evapotranspiration from spinach crops across different planting dates, different weather conditions, and different areas of production; measure water application efficiency and distribution uniformity in sprinkler irrigated spinach; and determine soil moisture and salt distribution during the season. This data will allow the development of irrigation management applications that will help spinach producers decide on timing and quantity of irrigation needed for crop and salinity management.

Arkansas Agriculture Department

Amount Awarded:	\$302,776.57	Number of Projects:	8
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- The Arkansas Agriculture Department will promote Arkansas's specialty crops at the Produce Marketing Association Fresh Summit 2018 by purchasing exhibit space, renting a booth structure and enabling Arkansas specialty crop producers to be sub-exhibitors and attend the produce show to generate new sales and retain existing buyers, and to increase awareness of Arkansas's specialty crops outside the state's borders.
- The Arkansas Agriculture Department will promote the use of specialty crops through a series of five events. These events will showcase the health benefits of specialty crops, as well as preparation and production techniques of Arkansas grown specialty crops by hosting and promoting events in each region of the state (Northeast, Southeast, Southwest, Northwest, and Central Arkansas events for which local chefs will prepare health conscious dishes using specialty crops. These events are designed to increase awareness, utilization, and sales of specialty crops.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The University of Arkansas Cooperative Extension Service will work directly with blackberry growers statewide to advance a framework and board of advisors toward the development of an Arkansas Blackberry Association. The association will seek to increase and promote blackberry production in the state of Arkansas through collective organization, marketing and promotional campaigns.
- The University of Arkansas Cooperative Extension Service will increase pecan quality and yield by evaluating and revising predictive models to better time preventative fungicide applications for pecan scab and disseminating results to stakeholders through growers meetings and field days.
- The University of Arkansas Cooperative Extension Service will evaluate the impacts of integrating cover crops into horticultural systems on measures of soil conservation and economic returns. Results will be disseminated via two field days, three factsheets and five short videos.

- The University of Arkansas at Pine Bluff (UAPB) will conduct new or modified models to control the small hive beetle (SHB) in the beehive, collect the number of the SHB, and achieve fewer SHB in hives. Eventually, the results of the project will improve survival rate of beehives. The results will be disseminated to stakeholders through state, regional, and national meetings and UAPB Field Days.

Pollination is essential in the production of many vegetables, crops and fruits. Bees are the most important pollinators in agriculture. The honey bee population has been declining since the 1970s in the U.S. and other countries. Since then, other pests and diseases have been introduced that threaten the health of the honey bee colonies. Southern states, including Arkansas, are struggling to maintain healthy honey bee colonies because of the SHB. Because products on the market are not successful in completely eliminating the SHB, many beekeepers try methods of SHB control that are not legal and not based on sound science, and false information is spread through the apiary community

The project will investigate current products that trap the SHB, how to use these products in the current conditions of Arkansas, provide any new research insights into the mitigation of the SHB in hives, and disseminate the project results for our stakeholders to learn improved management techniques.

- Farmers' market producers face challenges of perishable crops and competitive marketplaces resulting in underutilized surplus produce. The purpose of this project is to strengthen Arkansas local food systems by creating value-added products from surplus specialty crops from a farmer's market. Value-added food products provide an alternative use for surplus specialty crops to extend market reach and increase farm income. The University of Arkansas System Division of Agriculture will work with a local farmers' market in Arkansas to use surplus market produce to develop value-added products for their market. The products will be made at the Arkansas Food Innovation Center, a facility for commercial production of food products. This project aids underserved farms, enhances local food systems, and generates content to help establish food processing centers by 1) working with farmers' markets to develop value-added products from underutilized specialty crop produce, 2) empowering underserved farmers and entrepreneurs to access value-added opportunities with locally grown specialty crops, and 3) providing content to assess economic impact. Outcomes of the project will increase breadth of local opportunities for underserved farmers and entrepreneurs by improving access to food processing techniques and opportunities for new facilities.

California Department of Food and Agriculture

Amount Awarded:

\$19,285,975.08

Number of Projects:

55

- The project addresses the goal to enhance the marketability and long-term competitiveness of specialty crops by leveraging the California Grown identity. Specifically, the project addresses the priority to expand opportunities for specialty crop producers, marketing orders, and other specialty crop stakeholders through innovative marketing and promotional activities that incorporate multiple specialty crop products.
- The California fig industry must act quickly to raise awareness, stimulate consumption, and drive sales of California grown figs to ensure a sustainable economic future for all involved in the domestic fig value chain. Leveraging the equity in the California Grown platform is critical to encourage consumers to seek out figs. This project addresses the priorities of emphasizing the quality, food safety, and healthy lifestyle benefits of specialty crops while leveraging the California Grown identity, and promoting California grown specialty crops by highlighting the diverse stories of California's specialty crop farmers and/or California's rich agricultural history.
- San Luis Obispo (SLO) Coast wines are indistinguishable in the marketplace due to limited market access and awareness. San Luis Obispo Wine Country Association (SLOWCA) will launch the "California Grown, SLO Coast Grown" marketing campaign to educate wine consumers in Los Angeles and San Diego, CA and the direct flight market in Phoenix and Scottsdale, AZ about the unique terroir of the SLO Coast region. With increased awareness of SLO Coast wine region, wine sales from SLO Coast producers will increase by 5 percent in target markets and increase awareness of SLO Coast Wines to 10 percent of all California/Arizona wine consumers by grant end. The project will focus on digital marketing efforts coupled with educational videos of winegrape growers featuring "California Grown, SLO Coast Grown" stories behind the vine coupled with participation in consumer wine events in target markets. SLOWCA will work with winegrape growers, California Polytechnic State University, San Luis Obispo (Cal Poly), and tourism partners to implement benchmarks to measure marketing efforts.

- The California Cherry Board (CCB) and the California Blueberry Commission (CBC) propose conducting a series of California Grown retail promotions in Japan featuring fresh cherries and blueberries. This project addresses the priority to expand opportunities for specialty crop producers, marketing orders, and other specialty crop stakeholders through innovative marketing and promotional activities that incorporate multiple specialty crop products leveraging the California Grown identity. Collaborative promotions between two California specialty crops, cherries and blueberries, will expand sales opportunities in Japan for industry growers, packers, and shippers during the concentrated harvest seasons. Using the California Grown identity, CCB/CBC aim to rebuild California fresh fruits' reputation in Japan as high-quality, premium products.
- California tomato demand is flat due to poor demand for canned foods. Most California processing tomatoes go to tomato paste, and research shows that by 2017, U.S. sales of canned goods will drop five percent from 2012 levels. This project addresses the priority to create economic opportunities for specialty crop producers through specialty crop market development activities that focus on local, regional, and international markets by leveraging the California Grown identity and promoting California Grown specialty crops by highlighting the diverse stories of California's specialty crop farmers and/or California's rich agricultural history. The project will create a campaign to connect consumers with California processing tomato growers and this healthy crop, creating consumer confidence, demand, and increased sales.
- The campaign connects consumers to specialty crop producers through the nationally broadcast series, Bringing It Home. These programs will air on PBS and will be integrated into a social media video campaign teaching consumers where vegetables are grown, who grows them, where and how to purchase them, and how to use them routinely. The five show and video series will create an educational but entertaining experience to ensure consumers adopt new behaviors of demanding and consuming more vegetables. The campaign will include farmers' stories and sustainability practices, health benefits, as well as new uses and innovative ways to incorporate these specialty crops into daily life demonstrated by local and national chefs. TRAC media services data will allow the project team to determine program reach and number of viewers.
- This project will expand opportunities for specialty crop stakeholders through retail promotions, media events, and trade/consumer educational opportunities in Mexico and China. California specialty crops are premium world products, and exports are on the rise to both Mexico and China. Working in cooperation with California Grown, the Center for International Trade Development (CITD) will implement project activities to showcase California specialty crops through an intensive in-store promotion campaign and develop new export sales in business-to-business meetings in both Mexico and China, capitalizing on the uniqueness of each market. Promotions will include product sampling and chef demonstrations to focus campaign awareness on specialty crops. Project success will be evaluated by a sales increased from \$4 million to \$6 million and by 50 percent as a result of marketing and/or promotion activities serving 60 California specialty crop suppliers.
- The proposed project would create a multi-media educational outreach campaign targeted at California school foodservice directors to raise awareness of how to comply with the Buy American provision of the National School Lunch Act and encourage increased usage of California grown canned peaches, pears, and olives by California schools. This project addresses the priority of increasing availability of specialty crops in homes, school, the workplace, hospitals, prisons, and underserved communities and increasing the awareness of, and demand for, sustainable, locally sourced specialty crops.
- This project addresses the priority of creating economic opportunities for specialty crop producers through specialty crop market development activities that focus on local, regional, and international markets by leveraging the California Grown identity. California wine has potential incremental sales of \$183 million by selling 15.7 million bottles of California wine in Florida.
- This project addresses increasing awareness of and boosting demand for sustainable Sonoma winegrapes/wine through a marketing campaign. Sonoma growers will be 100 percent sustainably certified by 2019 (based on growing practices). Leveraging the message can boost wine/grape prices. Wine Intelligence research shows higher purchase interest by 68 percent of all respondents (not just premium discussed above) if Sonoma wine is promoted as sustainable. This project will share the value of sustainable Sonoma wine and sustainable vineyard practices with trade, media, and consumers.
- The Center for Ecoliteracy (CEL), in collaboration with the California Thursdays Network of 71 school districts committed to serving freshly-prepared meals made with California grown fruits and vegetables, will advance an innovative serving model to increase the procurement, consumption, and awareness of California specialty crops. This project includes three integrated efforts: 1) developing a toolkit of resources for "Shaker Salads" (salads served in clear, recyclable cups) including recipes, training resources, and promotional materials, 2) conducting professional development workshops for nutrition services staff, and 3) creating enrichment activities focused on fruits and vegetables to use in after-school and summer programs. Convenient and engaging, shaker salads are an effective service model that help make enjoying healthy California fruits and vegetables an easy choice for students.

- Research shows that sustainability is an important factor in wine buying, but consumers are confused about what sustainable means. Sustainability in Practice (SIP) Certified is a rigorous sustainable vineyard and winery program designed to meet the sustainability demand of consumers. This project bridges the gap between SIP's program and the need to raise awareness and sales of SIP wines. Stage one of the project is a research experiment to determine the best marketing and retail displays to reach consumers. Using the results, Stage two implements a revised marketing strategy for SIP. Baseline numbers from current promotional efforts will be compared to numbers using revised marketing strategies to measure project impact. SIP expects to increase sales by 10 percent and raise awareness among the targeted segment by 50 percent. Utilizing the research to focusing marketing strategies SIP will be more efficient, reach more consumers, grow demand, and improve return on marketing costs.
- This project targets the Central Sierra Nevada areas not served by existing University of California (UC) Master Food Preserver Programs, educating adults and children on the health benefits of incorporating specialty crop in meals throughout the year to increase consumption. Participants will learn how preservation methods impact optimal food safety and quality during long-term storage. Classes will increase participants' knowledge through live demonstrations and hands-on workshops.
- Ceres Community Project's Youth Program provides a unique and transformative educational experience by engaging youth directly in the production, preparation, and consumption of California-grown organic specialty crops. This project engages 1,054 youth with an average of 60 hours each of hands-on learning and nutrition education about specialty crops. As a result of their participation, youth increase their consumption of specialty crops by an average of one serving per day, and develop life-long skills in how to access, produce, and prepare specialty crops.
- This project brings together multiple stakeholders to formalize and expand an existing food hub pilot project. The demand for locally grown specialty crops has outpaced supply, especially among school districts in Ventura County. The food hub helps bridge the need between specialty crop growers and institutional buyers. The hub is located at McGrath Family Farm, where on-farm processing has occurred for the last nine years in their county approved facility. The food hub will help an additional 14 small-mid scale growers meet this increased demand by aggregating and lightly processing multiple specialty crops. Further, by lightly processing specific specialty crops (i.e., carrots, lettuce, and celery) the hub meets the needs of school districts that want to purchase more specialty crops but do not have the capacity to process them on-site themselves.
- This project will connect this underserved and untapped market to California specialty crops through the expansion of Community Services Unlimited's social enterprise, the Village Market Place (VMP). The VMP-FH will: 1) increase the availability of specialty crops in underserved communities by expanding the number of venues where SCLA residents can purchase locally produced specialty crops, 2) increase capacity for small-scale specialty crop distribution into urban communities by establishing a Food Hub in SCLA that will aggregate locally produced specialty crops for sale through existing and new retail and wholesale channels, and 3) increase the awareness of and demand for sustainable, locally sourced specialty crops through an integrated marketing/education campaign that will include the promotion of local farms and farmers through featured profiles; education on the history, cultural connections, and nutritional benefits of select specialty crops through classes and educational materials; and promotion of venues where residents can purchase locally produced specialty crops in SCLA through social, print, public and other media.
- This project intends to increase winegrape sales in Nevada County through a comprehensive marketing and public relations campaign for SVA products targeting Reno, Tahoe, Nevada County, and Placer County; and increase the organizational capacities of SVA and its members through recruitment and training. The intended outcomes by 2020 are: 1) a 10 percent increase in annual sales for SVA products, and 2) increase in consumer awareness and intent to access SVA's products. These outcomes will be measured by: 1) a baseline, midpoint and follow-up comparison of SVA's member's annual sales data, and 2) a baseline and follow-up awareness and intent to access consumer and buyer survey.
- This project aims to develop a green extraction technology that produces pre-digested proteins with improved functionality (more soluble, more digestible) and reduced allergenicity. This goal will be achieved through the use of specific enzymes that act on protein and carbohydrates (N-glycans) that might affect the complete digestion of the protein and cause allergenic reactions. Processing conditions will be optimized to extract and fractionate oil, proteins, and carbohydrates from almond extracts for further characterization. This project will also investigate the effects of processing conditions on the biological and functional properties of the extracted compounds. Almond processors will be provided with new methods that have the potential to improve protein functionality and positively impact the overall consumption of almond products.

- This project addresses the priority to increasing capacity for small-scale specialty crop production and distribution into urban communities by expanding California specialty crop urban market access in two ways: 1) offer wholesale fresh, frozen and processed California specialty crop increases purchases from farmers, and 2) by including processed products, farmers will be able to sell a broader range of their product, including "firsts" for fresh wholesale and "seconds" for processing. This project increases small scale California specialty crop distribution into urban communities by meeting existing, and creating new retail and customer demand for both fresh and processed produce. By 2020, sales of fresh California specialty crop coupled with processed and frozen California specialty crop are projected to reach at least \$650,000.
- This project will develop an interactive, educational program to enable childcare providers and parents of children with Avoidant/Restrictive Food Intake Disorder (ARFID) to employ knowledge and techniques used by clinical professionals to promote increased California specialty crop consumption among children suffering from ARFID to develop lifelong healthy eating habits. The project will also increase consumption of specialty crops through education that integrates specialty crops into a healthy diet by providing strategies such as sensory oral sequencing, textural adjustment, food chaining, video modeling, and tasting interaction to open the world of tasty and nutritious specialty crops to a population of children who would otherwise avoid them. The developed program will present specially tailored opportunities and tools to help children with ARFID and their families increase their knowledge of how farmers produce specialty crops and how they can be grown at home. A Program Guide presenting an overview of the program will be developed to help healthcare professionals, care providers, and families of children with ARFID use the program materials and tools to help children with ARFID and their families understand the program and use the collateral materials effectively. Lastly, it will introduce culinary strategies designed specifically to develop a lifelong specialty crop palate in children with ARFID.
- Planting Justice (PJ) will empower low-income Oakland residents to improve the health of their families, schools, and communities by increasing access to and consumption of healthy, affordable, and culturally relevant specialty crops at school and in the home. With guidance from PJ's diverse team of educators, participants will transform high-impact community spaces into organic, bio-diverse urban gardens growing solely nutrient-dense specialty crops. Nutrition and culinary arts lessons will teach youth and adults to prepare delicious, affordable meals using solely specialty crops. The educators come directly from the communities served, having transcended their own struggles with hunger and poverty to become leaders in the good food movement.
- This new venture will expand workshops, trainings at industry events, and create new educational materials. Activities will encourage adoption of environmentally and economically responsible farming methods. The goal is to convert 900 specialty crop growers (almond, walnut, winegrape, tomato (row crop), melon (row crop), sweet potato (row crop), and other fruit and vegetable crops) into adopting better input methods for greater financial savings. This project will only target California specialty crop growers. Results and success will be measured by grower surveys. This project has strong regional support.
- This project addresses the priority of education to promote increased specialty crop consumption among children to develop lifelong healthy habits and increasing knowledge of how to produce, prepare, or preserve specialty crops. The new lesson plans will include Gourmet Gardens focusing on growing specialty crops, Tasty Testing focusing on preparation for a tasting and nutritional value of specialty crops, and the Pickling Project focusing on methods of food preservation. The Agricultural Fact Sheets, will provide nutrition and production information about the wide variety of specialty crops. To extend the lessons, students will have workbooks with independent reading and activities. Videos will be created, giving an inside look at how farmers grow and process their specialty crops, and how educators incorporate gardening and nutrition into their classrooms. The project will culminate in participating classrooms creating a video presentation to show what they've learned, "From Start to Finish."
- This project addresses the priority of education to promote increased specialty crop consumption among children to develop lifelong healthy habits; increasing consumption of California specialty crops through education that furthers integration of specialty crops into a healthy diet; and increasing knowledge of how to produce, prepare, or preserve specialty crops. The proposed Nutrition Specialist will implement a nutrition curriculum at all OUHSD schools that will be reinforced by the Student Nutrition Advisory Councils (SNAC) through activities at school. In addition, this project aims to teach students about careers in agriculture while improving leadership and professional skills.

- San Francisco Unified School District's (SFUSD) project, "Make Half Your Plate California Grown," will increase knowledge, consumption, and preference for California specialty crops through nutrition education, professional development, and a city bus poster campaign. The initiative will target students at eight low-income elementary and secondary schools and promote six California specialty crops: cucumbers, persimmons, greens, mandarins, avocados, and strawberries. Project staff will develop, pilot, and publish six lessons to promote California grown fruits and vegetables highlighting their health benefits, seasonality, and taste. Training will be provided to classroom teachers to empower them to teach lessons and to tour neighborhood gardens and farmers markets. Simple and low-cost recipes will be distributed to families and teachers. The "Make Half Your Plate California Grown" initiative will culminate in a poster campaign in the schools and on city buses.
- Botrytis cinerea (gray mold causal agent) causes pre- and post-harvest losses annually on many specialty crops. Disease management relies heavily on fungicide sprays, but resistance is common and can result in control failure and crop loss. An annual combined pre- and post-harvest loss of 20 percent (grape and strawberry) and 25 percent (blueberry) has been estimated due to gray mold each year. The objectives of the project are to survey Botrytis isolates collected from grape, strawberry, and blueberry crops to determine phenotypic and genetic variability of resistance to major classes of fungicides registered for Botrytis control for developing diagnostic assays. This data will provide growers with information on the efficacy of major fungicide groups and identify markers associated with resistance that can be used as early predictors of future efficacy. Markers will be available for developing diagnostic assays and developing spray programs to effectively manage this pathogen.
- The Center for International Trade Development at State Center Community College District will work with specialty crop companies, industry stakeholders, Partnership for the San Joaquin Valley, and community colleges to host two regional specialty crop job fairs with the goal of assisting 100 specialty crop companies in attracting and securing over 600 skilled and unskilled workers. Specialty crop companies will be assessed, recruited, and trained to maximize the benefit of job fair participation. Job seekers will receive a variety of career enhancement tools to help prepare for job fairs and success when hired. Project evaluation will be based on surveys administered to companies immediately following, at 90, and 180 days; actual results will be compared to projected 250 jobs maintained/created and 100 small businesses maintained/created will measure success. A one page summary report outlining activities and corresponding outcomes and best practices handbook will be disseminated.
- Organic Farming Research Foundation (OFRF) with support from University of California Sustainable Agriculture Research and Education Program (UCSAREP) and Cal Poly San Luis Obispo (Cal Poly) Center for Sustainability will offer free online training modules in organic specialty crop production. Trainings will target beginning farmers, existing organic farmers, and farmers in transition to organic production. In 2015, OFRF surveyed California organic farmers and found a need for training on: 1) irrigation and drought management, 2) soil health, biology, and nutrient cycling, 3) weed management, 4) disease management, 5) insect management, and 6) economics and marketing. OFRF will create six learning modules on the above priority areas focused on organic orchard and vegetable production. These modules will include descriptive essays, video presentations, interviews with researchers, and virtual field trips to production and research sites. Success of the project will be based on the number of participants, the number who adopt new sustainable practices, and participant evaluation.
- Under the Food Safety Modernization Act (FSMA) Mitigation Strategies to Protect Food Against Intentional Adulteration (Food Defense Rule), Food and Drug Administration (FDA) registered food facilities are required to develop a food defense plan to protect against intentional adulteration. This project will assist California specialty crop facilities meet this new requirement through an online program on creating a food defense plan with model plans representing various specialty crop industries. Representative specialty crop companies of various size and complexity will be recruited to develop model plans. The food defense plans will contain a vulnerability assessment, mitigation strategies and management, and training and recordkeeping. The result will be a formal food defense plan for each volunteer company and template plans for use by all impacted California specialty crop facilities. The project will include a social media outreach plan and a limited number of workshops to socialize the project.
- This project will increase the viability of vegetable, herb, and flower growers and nursery operators by improving the success and sustainability of their seedling production. This project builds on over forty years of organic specialty crop production and training at the 30-acre farm and 3-acre garden of the Center for Agroecology and Sustainable Food Systems (CASFS) at the University of California, Santa Cruz (UC Santa Cruz). Through trials and improved practices, the project will demonstrate and teach increased efficiency, quality, and sustainability in seedling production. The project will train over 250 growers through field days, conference presentations, a webinar, and CASFS apprenticeship classes and trainings. The project will also develop, write, and publish the Organic and Sustainable Seedling Grower Guide based on these trainings to be distributed free of charge online.

- Fort Bragg is well suited to specialty crop production, but offers few opportunities for youth to learn agricultural skills, and local farmers struggle to adapt to the changing climate and production environment to meet the demand for specialty crops. Noyo Food Forest (NFF) will expand and enhance its agricultural training program by focusing on water management, soil building, and other sustainable production strategies; adding a new tier of training for beginning farmers; and giving interns opportunities to learn from active farmers. Objectives are to: 1) provide hands-on specialty crop training to 52 high school-age youth through internships of 7-12 weeks, and 2) increase specialty crop production skills of 150 beginning farmers by offering six specialized specialty crop production workshops per year. Success will be measured by the number of youth that continue with agricultural studies or careers and pre- and posttesting of the extent to which participants acquire and use agricultural knowledge and skills.
- California Sustainable Winegrowing Alliance (CSWA) seeks to increase the adoption of sustainable winegrowing practices that ensure the biggest return on investment in regards to the triple bottom line (environmentally responsible, socially and economically beneficial). By providing education and training aimed at the 5,900 California winegrape growers and 4,600 bonded wineries the project will address current and future challenges for participants (e.g., water scarcity, high energy costs, climate change, etc.) and help ensure the long-term viability of the industry in an increasingly competitive global marketplace. Educational workshops/webinars and hands-on technical training will educate 360 plus winegrowers on the top 62 sustainable practices that positively impact the triple bottom line and new educational resources, case studies, videos will reach 8,200 plus winegrowers. Project outcomes will be tracked via grower participation and assessment data to measure the increase in sustainable practice adoption.
- This project assists California specialty crop growers with implementation of Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR). It will create and deliver educational materials to ensure understanding of the regulation and facilitate grower compliance in agricultural water sampling, environmental assessments, and record keeping. The materials will incorporate and build on official Produce Safety Alliance (PSA) training materials and will include a self-assessment tool to gauge alignment of current practices with the PSR. The materials will be available as online courses and inperson workshops. To increase the impact of training and extend grower support throughout California, the project will create training packages tailored for cooperative extension specialists and farm advisors that regularly interact with the specialty crop industry. All materials will be developed in English, Spanish, Hmong, and Mandarin. Student assessments and evaluations will be used to measure project success.
- This project facilitates continued development of cost-effective technology for specialty crop growers to evaluate and improve/optimize irrigation activity. The CropManage web-application promotes best practice regarding specialty crop water and nutrient management, and was recently expanded to operate on celery and cauliflower. Field trials on these crops will be performed at the U.S. Department of Agriculture (USDA) Research Station in Salinas during 2018 – 2019. Crops will be initially established by sprinklers, followed by four replicated surface-drip treatments at 50 percent, 75 percent, 100 percent and 150 percent of crop evapotranspiration (ET) guided by CropManage. Support measurements will include applied water, canopy cover, soil water content, reference ET, weather data, and crop yield. Outreach by way of grower events, training sessions, scientific conferences, and journal publications. Industry adoption rate of CropManage will be monitored and users will be able to offer feedback on their outcomes/impacts.
- Native hedgerows on farm edges benefit wildlife, pest control, carbon storage and runoff, but hedgerow planting by farmers is limited by establishment and maintenance costs. Elderberry trees are often planted in California hedgerows and have potential to provide an income producing crop, offsetting costs. The California market for elderberry products is growing, but very little commercial supply comes from California. Little is known about growing, marketing, or food chemistry of California elderberries. This project will assess and develop the potential for elderberries to become a commercial California specialty crop. Strip plantings of three cultivars plus native elderberries will be installed on six farms in Yolo, Solano, and Monterey counties to assess growth characteristics, management needs, and yield potential. Berries will be analyzed for flavor and nutrition components across cultivars. A production and marketing guide, cost and return study, market analysis, and farmer and buyer outreach activities will be key outputs.

- Water is increasingly becoming a limited resource in California, and lettuce production could face costly yield losses if water supplies continue to diminish. The project identified a number of physiological and molecular traits in lettuce that differ among drought treatments, and among drought-sensitive and drought-tolerant cultivars. These traits suggest an active role of the root system in managing water access. Some of the molecular traits studied also suggest a remedial effect of high nutrient load on droughtstressed plants, which suggests that improving lettuce nutrient-use efficiency through its ability to access nutrients from the soil is a promising target for increasing tolerance to drought. This project aims to describe variation in root morphology and gene expression in roots of different lettuce cultivars and different recombinant inbred lines (RILs) to identify genes for better marker-assisted selection and breeding of drought-tolerant and nutrient efficient lettuce.
- The Center for Produce Safety will partner with the University of California, Davis (UC Davis), to validate die-off expectations for bacterial pathogens and corrective action options for shade-house grown specialty crops. Science-based guidance for assessing the risk of contamination of fresh produce grown under protected culture is sparse. Closing this knowledge gap is critical to decisionmaking and application of validated corrective actions in the case of pathogen detection in product or environmental samples. The specific goal of this project is the validation of die-off expectations for bacterial pathogens and corrective action options for shade-house grown crops (cucumbers, tomatoes, and peppers). The research team also proposes to evaluate corrective actions necessary to minimize the risk of transference and persistence of bacterial pathogens in the shade-house. It is anticipated that project results will have a high degree of transferability to diverse protected specialty crop culture systems. The performance measure for this project will be a detailed publication describing the predisposing and interacting pre-harvest and postharvest root-cause(s) of a serious outbreak attributed to cucumber. The team expects to provide at least four sampling, monitoring, verification, and corrective action options for producers of shade-house grown crops to prevent marketing of contaminated crops and limit economic losses by minimizing crop destruction through validated sampling plans.
- To produce quality plants, container plant nurseries use large amounts of inputs, including nitrogen (N) fertilizers. There is increasing pressure from state regulatory agencies to reduce N leaching to groundwater and Central Valley Regional Water Quality Control Boards require development of nitrogen management plans by growers. Applied N is targeted to the crop, but potential N losses can occur in runoff, leaching, and gaseous emissions. However, it is necessary to identify how and where N losses occur from container plant nurseries to develop mitigation strategies to address them. The project will measure all N inputs and outputs into a container nursery system, including N applied, gaseous emissions, in growing media, utilized by plants, and irrigation, rain, and runoff water to develop a system N balance and determine loss mechanisms. After identifying N losses, the project will test mitigation strategies to limit N loss from container plant production nurseries.
- Despite the economic relevance of citrus in California, information on crop coefficients (Kc) to guide citrus growers in determining evapotranspiration (ET) and improving irrigation scheduling is limited and outdated. This project will develop and outreach updated information on ET and Kc of mature orange and mandarin orchards with three different levels of applied water in relation to various canopy sizes, planting densities and row orientations that are typical of the citrus production areas in the San Joaquin Valley (SJV). Project staff will monitor plant water status and evaluate the effect of the three different irrigation treatments on orchards' ET, crop yield, and fruit quality. The project will also develop a grower-friendly online calculator to estimate citrus ET/Kc based on orchard-specific canopy features in the climate of the SJV under micro-irrigation. Project's outcomes will enable the citrus production industry to pursue resource-efficient irrigation management and improve water productivity.
- As the central valley fog disappears, the dormancy of pistachio is severely influenced. Sustained sunlight warms the buds and decreases chill accumulation. If the accumulated chill is not sufficient for dormancy release and bud break the result is abnormal flowers, poor bloom synchrony, high rates of blanks and low yields. The project proposes to develop: 1) an automated solid state canopy delivery (SSCD) system which mists the trees giving very uniform coverage, 2) data (air temperature, air humidity, solar radiation, and wind speed) acquisition system, and 3) a control system to apply mist (controlling the SSCD) only when it's needed (based on weather data). The project proposes to develop an environmentally friendly and high cost-performance method (misting system). This system will cool down the bud temperature on sunny days to avoid chill offset.

- This project will enhance the competitiveness of Central Coast vegetable and berry specialty crops by training growers on soil management practices that can improve farm productivity; compliance with water quality regulations; and resiliency to climate change, water scarcity, and soilborne diseases. One hundred-eighty beginning and experienced growers will be trained in the use, monitoring, and benefits of cover cropping practices to optimize production inputs and reduce costs in specialty crop rotation systems including strawberry, broccoli, and leafy greens. On-farm implementation and monitoring will produce site-specific data on agronomic, economic, and environmental value of selected practices, and provide demonstration sites for broader grower engagement. The project will broadly share information to motivate adoption of soil health management practices to address local threats affecting the long-term viability and competitiveness of specialty crops in our region.
- This project will develop a smart irrigation decision support system to help almond growers in California in making irrigation management decisions. The system will consider several variables such as soil type, growth stage, climatic conditions, soil salinity, water quality, irrigation system, and other site-specific factors in deciding when and how much is water is needed for each zone. The system will also assist growers in defining zones of similar characteristics then develop variable irrigation scheduling program for each zone. Working with Almond Board of California, four demonstration sites with growers that have orchards representing typical orchards in California will be selected. The project will also validate and test newer commercial irrigation technologies to help almond growers select appropriate technologies for their operations. A mobile application will be developed to assist growers in developing smart irrigation decisions based on the above variables.
- This project will evaluate how three distinctly different recycled waste materials used as soil amendments affect crop performance, soil health, and the carbon footprint of almond orchards. Legislative measures to keep food waste from landfills and the disappearance of biomass power plants call for innovative uses of organic materials to improve soil quality and increase almond tree resilience to reduced irrigation. In side-by-side trials, this project will assess the impacts of composts, biochar, and food waste hydrolysate on tree growth, stem water potential during deficit irrigation, greenhouse gas balance, and soil biodiversity. The outcomes, including economic analyses, will be communicated to stakeholders through field days, a permanent website, and scientific and trade journal publications. Based on the perceived benefits as measured in this project, growers will be able to make informed decisions on how to use and invest in these organic inputs.
- This project will enhance competitiveness of specialty crops through grower adoption of sustainable fertilizer practices. For most crops, correlations between leaf nutrient concentration and yield and the best time to take leaf samples have been determined. Such information is limited or unavailable for pomegranate. Experiments will be conducted for two growing seasons in mature, commercial orchards. Fertilizer will be applied at one of three rates over three or four application times. Treatment effects on nitrogen leaching will be measured using lysimeters and a nitrate meter. Leaf samples will be collected four times a year to determine leaf nutrient concentrations. Yield data will be collected to determine relationships between leaf nutrient concentrations, fertilizer applications and yield. Commercial tissue testing labs will have pomegranate-specific leaf sampling and sustainable fertilization protocols. The adoption of these best management practices will be assessed by surveying labs and growers.
- Cucumber green mottle mosaic virus (CGMMV) was first reported in the United States from Yolo County melon seed fields in 2013, and again in 2014 in watermelon fields. For both years eradication measures were followed, including quarantine and abatement efforts. The eradication efforts seem to have been successful, but the biology of the virus is such that future introductions are likely. CGMMV is a seed borne virus, and overseas seed production where the virus is endemic may be the source of future outbreaks. Given current melon industry practices, there are points at which detection and management methods can be improved for CGMMV. This project will, first, conduct surveys to assess for CGMMV incidence in the initial reported and surrounding areas to ensure eradication. Second, it will assess seed and possible pollen transmission properties of CGMMV, and assess cultural practices (greenhouse grown seedling transplants) as contributors to CGMMV spread. Select project participants will present at outreach and extension events to share knowledge.
- South American Palm Weevil (SAPW) is an invasive pest in California that poses an unprecedented threat to California's date industry, estimated in 2015 to be worth \$68 million. Feeding weevil larvae kill palms and this pest vectors red ring nematode (RRN) which also kills palms. SAPW was first recovered in Tijuana in December 2010 from dead Canary Island date palms (CIDPs). SAPW was officially trapped by the U.S. Department of Agriculture in San Diego County in May 2011. The California Department of Food and Agriculture (CDFA) monitoring programs for SAPW trapped 111 weevils over 2011-2013, but no instances of SAPW-induced palm mortality or RRN were recorded. In 2016, surveys resulted in the detection of many CIDPs killed by SAPW in San Diego County, ranging from San Ysidro north to Chula Vista. Large populations of SAPW have established in riparian areas in San Diego that have naturalized CIDPs. This proposal has identified urgent research needs for addressing the SAPW invasion in California.

- Consistent identification of plant pathogen strains is a recognized need for the California vegetable industry, regulatory agencies, and growers. There is no recognized global body that regulates the consistent naming of plant pathogen strains. Inconsistencies exist and can undermine grower confidence in claims of disease resistance. The project's goal is to expand the development and distribution of reference materials to facilitate consistent and accurate strain identification. This will build grower confidence in claims of disease resistance and set realistic field performance expectations in the presence of diseases against which claims of resistance are made. The project will develop differential plant hosts with individual resistance genes, reference pathogen strains, and instructional white papers for use as an industry standard by public, regulatory, and industry scientists. Success will be measured by online tracking of the increasing number of users of these reference materials.
- In spinach, new genetic resistance-breaking races of downy mildew (DM) appear every two years, threatening the crop, especially for organic production. This project aims to survey DM race diversity in spinach growing regions over two years and develop race-specific in-field assays to: 1) detect DM races to guide farmers and breeders in germplasm selection, 2) breed broad genetic resistance to DM for organic production to reduce losses, and 3) train students in pathology and plant breeding and extend information to growers and industry personnel. The impact of this project will be measured through the use of survey data by seed industry personnel and growers and specificity and adoption of in-field assays, the development of germplasm with improved genetic resistance across multiple DM races, and experiential learnings acquired by students. Outreach will be accomplished through workshops, field days, professional classes, internships, and media. Results will guide strategies to control DM and varieties will be licensed for sale beyond the life of the grant.
- The project goal is to understand the genetic mechanisms of resistance to *Lygus* in order to speed the development of improved varieties for California lima bean growers. Researchers will seek to identify markers linked to *Lygus* resistance and other agronomic traits for marker-assisted selection and determination of inheritance using a previously developed recombinant inbred line (RIL). Further study will also investigate the possible mechanisms for *Lygus* resistance under field conditions and establish potential correlations with *Lygus* resistance/ tolerance. The project will develop and release new *Lygus*-resistant cultivars via an ongoing crossing program and multi-location, multi-year agronomic evaluation of already developed advanced lines and will develop new integrated pest management recommendations for *Lygus*-resistant lines. Using results, researchers will host educational field days, present at industry meetings, and perform other outreach activities to provide the lima bean industry with information about newly developed lima bean lines and improved management methods.
- Bacterial canker of tomato (BCT) can cause significant losses in tomato production. There are no chemical or genetic control methods. The best way to control this disease is to detect the pathogen on contaminated seed lots and identify infected transplant material to stop disease spread. BCT is caused by the bacterial pathogen, *Clavibacter michiganensis* subsp. *michiganensis* (Cmm). Pathogen detection is primarily performed by immunostrips and PCR, but these methods are prone to false positives. This project will develop a specific detection platform that can distinguish between Cmm and non-pathogenic *Clavibacter*. Previous work has sequenced 39 *Clavibacter* genomes to identify targets that can specifically detect Cmm. The efficacy and sensitivity of the new Cmm diagnostic will be evaluated on plant and seed samples. Information will be provided to growers, extension agents, and seed testing laboratories. Surveys will be distributed to estimate adoption as an indicator of success.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The Center for Produce Safety will partner with North Carolina State University (NCSU) to evaluate the use of vegetative buffer zones to reduce the risk of transmitting human pathogens from animal operations to produce fields in co-managed farms. The overall goal of this project is to evaluate the effectiveness of fast-growing and cost-effective multi-row VBZs between animal production areas and adjacent produce fields in reducing or eliminating the potential movement of Shiga toxin-producing *Escherichia coli* (STEC) and *Salmonella* on co-managed farms. This project will determine, 1) the risks associated with the presence of vegetative buffer zones (VBZs) as barriers and/or sources of pathogen transmission between animal production areas and produce (tomato and lettuce) fields, 2) whether pathogen movement into produce fields increases with removal of the VBZ, and 3) whether the proposed strategy is a tangible and cost-effective solution for growers applying co-management practices. Presentation of project results at the annual Center for Produce Safety Research Symposium will allow for evaluation by produce industry and regulatory stakeholders of the progress toward the objectives, accomplishment of activities, and performance related to the timeline and anticipated milestones. Indicators will include specific information on program implementation, perspectives from stakeholders and project participants, and analysis of the completion of each activity.

- The Center for Produce Safety will partner with California Polytechnic State University to evaluate the behavior of *Listeria monocytogenes* (*L. monocytogenes*) on non-traditional salad ingredients as influenced by storage and distribution conditions and the microbiome. Fresh-cut produce has provided an easy and convenient way for consumers to increase consumption of healthy foods. To meet consumer demands for “superfoods,” and to create sustainable products by utilizing more of the whole plant, new salad blends have been developed from non-traditional fresh-cut salad ingredients. Many of these ingredients are not normally consumed raw or may not have even been widely consumed. New salad ingredients include beet greens, kale, Brussel sprouts, and shredded broccoli stalk. While researchers have investigated the growth of *L. monocytogenes* on common fresh-cut salad ingredients, such as spinach and iceberg lettuce, research on the new salad ingredients is limited. This project will determine if and under what conditions *L. monocytogenes* will grow on non-traditional salad ingredients. This will be accomplished by placing a known number of *L. monocytogenes* cells on the selected produce and monitoring the population under ideal, abusive, and “real-world” storage conditions. Also, the influence of the produce microbiome on *L. monocytogenes* behavior will be investigated. Producers of bagged salads and fresh-cuts will be able to use these data to guide risk management strategies for beet greens, kale, Brussels sprouts, and broccoli stalk. The project’s industry cooperators will be engaged throughout the research study to ensure results are communicated effectively and to the appropriate audience.
- The Center for Produce Safety (CPS) will partner with Clemson University to develop practical preventive intervention strategies to improve the safety of stone fruits. *Listeria monocytogenes* is an important foodborne pathogen commonly found in the environment. Contamination of stone fruits is problematic since these products are usually consumed without heating. In addition, some surfaces associated with packing operations (brushes, peach rollers) are inherently difficult to sanitize. In the packinghouse, these fruits are covered (brushed) with a wax-based coating containing antifungal agents to prevent moisture loss and fungal infection. This project will develop and compare alternative coatings based on edible components that have antilisterial properties in addition to their physical barrier and antifungal role. The coatings will be formulated to contain safe antimicrobial agents, such as nisin, Listex P100, organic acids, and/or their combinations, and to be applied as a spray, thereby reducing the risk of cross-contamination in the packinghouse. Experiments will be performed in laboratory settings and validated in challenge studies with inoculated stone fruits. The goal is to formulate a coating that would prevent *Listeria* contamination on fruits and bacterial persistence on packing equipment. Results from this study will be used to provide improved pathogen control in addition to basic good agricultural practices, thereby helping the stone fruit industry to produce safer produce for human consumption.
- The Center for Produce Safety (CPS) will partner with the University of Illinois at Urbana-Champaign to develop a multi-faceted approach to reduce the intrusion of the Pacific tree frog into leafy green production environments. This study will use an integrated approach to improve exclusion methods used to keep frogs from entering production environments. Team engineers will improve on the traditional drift fence by testing new materials, designs, and deterrents to determine an optimal design for field sites. The team also will test new thermal imaging technology to detect frogs in leafy green environments. From the biological perspective, the research team will test the efficacy of noninvasive acoustics to attract frogs away from ag-adjacent bodies of water and conduct targeted surveys to better understand local frog populations in leafy green production areas. The study will provide novel data on fence design, frog detection, and animal responses to deterrents and acoustic signals, as well as greatly increase understanding of frogs and the leafy green environments they use. All components of this study integrate to provide a multifaceted approach to improving frog management. At the conclusion of this project the team anticipates the development of one or more methods for reducing and potentially eliminating Pacific tree frog intrusion from leafy green fields. Each method developed in this study will aim to quantify the reduction of Pacific tree frog intrusion by the simple implementation of the method. In the case of multiple methods showing success, this project will further investigate the effect of using multiple methods in combination for even better control.

Colorado Department of Agriculture

Amount Awarded:

\$690,633.81

Number of Projects:

13

- Due to decreasing U.S. customers and slowing sales, the Colorado Certified Seed Potato Growers Association (CCPGA) is interested in expanding exports and increasing sales to Canada. Currently the province of New Brunswick, Canada is the only purchaser of Colorado seed potatoes, but it is a large source of income for Colorado seed potato growers. In 2018, interested CCPGA members will travel to Winnipeg and Calgary, Canada to meet potato growers from those regions and expand Colorado Certified Potato Seed into new provinces in the country.

- The Colorado State University (CSU) Specialty Crops Program Coordinator will oversee and conduct well-focused research combined with technical support and outreach to provide Colorado specialty crop producers with science-based information to stimulate innovation, competitiveness, and success.
- Colorado State University (CSU) researchers will develop and disseminate information on effects of field irrigation amounts on vegetative growth of *Aronia melanocarpa* cv. Galicjanka in arid locations statewide during the 2018-2019 growing seasons, with the information resulting in crop diversity via new irrigated Aronia businesses in Colorado and other arid locations, to supply the growing demand for Aronia juice, fresh and dried berries, wine, jams, and nutraceuticals.
- This project will be conducted by the Colorado Department of Agriculture (CDA) Fruit and Vegetable Section of the Markets Division. The Fruit and Vegetable Section, in cooperation with the USDA Fresh Produce Audit Verification Program, provide Good Agricultural Practices (GAP)/Good Handling Practices (GHP) inspections for specialty crop producers and handlers of Colorado.
CDA will provide GAP and GHP inspections to specialty crop producers and packing sheds in Colorado.
The objectives of the project are: to assist farmers/handlers in becoming GAP/GHP Certified and to provide reimbursement for farmers/handlers for the cost of USDA GAP/GHP Certification.
The outcomes from the project will be as follows: 150 producers/packing shed owners will become GAP Certified or continue GAP/GHP certification and access additional markets.
- The Colorado Department of Agriculture (CDA) will partner with Colorado produce associations, growers and handlers to exhibit at the Produce Marketing Association's (PMA) Fresh Summit Expo to be held in Orlando, FL October 18-20, 2018. A Colorado Pavilion at PMA, the largest produce expo in the United States, increases exposure and sales potential of Colorado specialty crops and companies. CDA will assist up to 12 Colorado companies and associations in gaining a national and international buying audience through attendance at Fresh Summit Expo, increasing awareness of Colorado as a reliable supplier of fruits and vegetables.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Colorado State University will quantify hop cone (*Humulus lupulus*) quality to optimize the postharvest attributes of locally grown hops by evaluating storage methods based on the levels of aromatic flavor compounds and disseminate results to Colorado stakeholders through educational training sessions for growers and brewers alike.
- Colorado State University will use a Unmanned Aerial Vehicle equipped with multispectral camera and thermal sensors to map vineyards to achieve early identification of areas damaged by phylloxera (*Daktulosphaira vitifoliae*), a recently discovered pest that feeds on the roots of grape vines; to guide phylloxera survey work; to map and document the spread of phylloxera; and to develop best management strategies for affected and non-affected vineyard areas.
- This project, led and executed by Colorado State University (CSU), aims to develop integrated pest management strategies for Cytospora canker on peaches in Colorado. We will build on previous research that shows chemical application success to further develop new cultural practices to reduce incidence and severity of Cytospora Canker. Our two objectives are to evaluate methods of application for effective conventional and organic fungicides for Cytospora control in a large-farm scale, and test peach cultivar susceptibility under stress conditions. Methods of chemical application include using several types of tree wound covering with conventional sprayers or pruning shears with an attached spray nozzle. Collected data will include canker size as a measure of chemical efficacy and pruning shear and spray effectiveness. For our second objective, cultivar susceptibility assays will be conducted in a greenhouse at CSU and under field conditions within an experimental orchard (Western Colorado Research Center) using ten cultivars from distinct breeding programs and currently used by Colorado growers. Selected Cytospora tolerant or susceptible cultivars will be subjected to drought or high pH stress conditions. A measureable indicator for outcomes will include a post-research survey examining how many growers have adopted these newly development best management strategies. Tree number sales per cultivar from local nursery distributors over the years will be a measurable indicator of how many growers are using Cytospora tolerant cultivars. The objectives herein will help the peach industry in Colorado by decreasing the number of Cytospora infected orchards and thereby increasing productivity and profitability.
- Hobbs Family Farm will develop, implement and promote an innovative cropping system consisting of mulberries and perennial pollinator plants for seed. Task areas will include selecting, propagating and planting mulberry and pollinator plant seed varieties; seeking buyer commitments; publishing a grower's guide for mulberry fruit and pollinator seed production as a high value innovative cropping system for semi-arid growing regions of Colorado; and hosting meetings for formation of a mulberry grower-processor guild.

- San Juan Resource and Development Council (SJRCDC) submits this proposal as the 501c3 fiscal sponsor of the Montezuma Orchard Restoration Project (MORP). Through propagation, orchard trials, information sharing and education, the Colorado Heritage Apple Trials Initiative will address a demonstrated need for increased knowledge and availability of cider, seedling and heirloom Colorado-grown apple trees and scion. MORP will collect scion for and graft 2,400 apple trees to distribute to public and private specialty crop stakeholders; implement five trial orchards in partnership with Colorado State University Extension, the Town of Dolores, the Gold Medal Orchard and Old Fort Lewis; work with the Montezuma School to Farm Project to expand school orchards and education programming; develop a sharable database and standardized data collection system for information on apple varieties; offer adult and youth grafting and pruning classes and network with Southwest Farm Fresh Cooperative to connect fruit-growers with wholesale distribution services. Project outcomes include increased knowledge, availability and production of in-demand specialty crops; new plant releases, networks, technologies and processes for specialty crop fruit-growers.
- Guidestone Colorado will increase production through season extension and build the capacity of the Farm to School Initiative- Holman Production and Incubator Farm in Salida. Guidestone's Farm to School Initiative supports the growing and procurement of locally grown, healthy foods for district cafeterias and fosters educational opportunities and curriculum connections. Our primary goals/outcomes for this project include the following:
 1. Increase produce provided to the school district by expanding production of tomatoes, fruit trees, and specialty field crops through season extension (moveable hoop house) and provide community/farmer education programs around 4-season farming at high altitude.
 2. Further develop/expand the apprenticeship/incubator farm model that will support the next generation of farmers in developing knowledge, skills and experience for launching their own farm operation.
 4. Work with the school districts in the region to increase capacity and establish best practices for producing food on school district property, procurement of other local food products, processing, and storage through coordinating training opportunities and working with the Colorado Farm to School Task force to connect with resources and opportunities throughout the state.
 5. Provide education support and connections with Farm to School including classroom visits, field trip opportunities, service learning opportunities, professional development for teachers, and lesson plans correlated to state standards.
- Colorado State University's San Luis Valley Research Center will evaluate various formulations applied to potato tubers for effectiveness in reducing potato shrink in storage. The results will be disseminated to stakeholders through grower meetings, field days and newsletters.

Connecticut Department of Agriculture

Amount Awarded:	\$320,918.81	Number of Projects:	6
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- The Connecticut Agricultural Experiment Station will investigate different plant growth regulators for their potential for preventing freeze injury in peaches and nectarines through artificially induced bud dormancy. The intended outcomes of this research are increased winter hardiness by preventing early bud break and improvement in fruit quality and yield. The Connecticut Agricultural Experiment Station will collaborate with peach growers in the state and will share results at fruit growers' meetings and via CT Dept. of Agriculture publications. The Outcomes of this research will help in protecting peach and nectarine production and improving fruit quality and yield.
- CT NOFA: The Northeast Organic Farming Association of Connecticut will conduct a three-year outreach campaign to increase farmer awareness and engagement in cover cropping and pollinator habitat management on specialty crop farmlands. To do so, CT NOFA will survey Connecticut's specialty crop producers, host workshops, provide one-on one consultation, and create promotional content for advertising and online to encourage farmers to cover crop and/or create pollinator habitat on their lands.
- The Connecticut Agricultural Experiment Station will establish a research center entitled the Produce Overwintering Program (POP). The program will be located at the Griswold Research Center, Griswold, CT. The research will be centered on the idea that many vegetable varieties can be planted in fall and overwintered. This will allow the plant to start growing earlier in spring than a grower could otherwise plant it. The first tests will be determining how to overwinter broccoli and cabbage seedlings so they head earlier in the spring. Each experiment will be conducted for a minimum of two years and yield data will be evaluated each spring. Variety trials and growing techniques need to be evaluated for many different crops for their appropriateness in Connecticut. The funding for the project will purchase a field high tunnel which will be built at Griswold Research Center. Funding will also purchase durable goods - plastic covers and wire hoops. POP will educate vegetable growers on overwintering techniques and varieties best suited for increasing yields. The outcome will be farmers adopting practices that will increase production. Educational opportunities will include publications, field days and grower conference presentations. Outcomes will be measured through surveys of growers' adoption of new practices.

- The Connecticut Agricultural Experiment Station (CAES) will locate, collect, identify, propagate and evaluate growth, yield, disease resistance, and quality characteristics for wild or escaped hop plants that have survived in Connecticut nearly a century after hop production. There has been wide interest in the production of locally grown hops among brewers, current farmers growing different crops and potential new growers, and the results of this project will be important in establishing a hop breeding program leading to the development and production of truly unique locally adapted hops as a new competitive specialty crop in CT. Hop cultivation has just started in CT and our previous project has proven the general feasibility. This project request will initiate a longer-term hop breeding program that will aim to develop and release Connecticut-adapted varieties. We will determine plant vigor, yield, cone quality, and disease resistance. To optimize hop production, we will demonstrate an integrated disease and pest management program as well as an appropriate fertilization and irrigation schedule. The CAES scientist will continue to support growers in economically and ecologically sustainable hop agriculture through a multi-faceted information system. This will include one-on-one assistance, scientific publications including fact sheets, a mailing list, and demonstrations and presentations of results in hop research meetings and hands-on field days at the Valley Laboratory in Windsor, and the Lockwood Farm in Hamden.
- CAES scientists will develop biological controls that can be used in the management of fire blight in Connecticut. Fire blight, caused by the bacterial pathogen *Erwinia amylovora*, is a devastating disease of apple and pear. Fire blight infection could occur in the scion part of the tree, resulting in yield reduction, and in the trunk and rootstock of the tree, causing tree death. Annual loss to fire blight and the cost of control is over \$100 million nationwide. Management tools for fire blight is very limited. Antibiotic streptomycin used to be the “silver bullet” for fire blight control, however, due to the development and spread of streptomycin resistance, streptomycin can no longer be used in many apple-producing regions. Furthermore, due to the raising concerns of the antibiotic’s impact to human health, use of antibiotics in the organic fruit production has been terminated since 2014. Biological controls are important nonantibiotic options, in which biocontrol microorganisms prevent the occurrence of disease by competing with the pathogen for nutrients and space. Although some biocontrol materials were developed for fire blight, the successful use of these materials is only restricted to the Western U.S. under the semi-arid conditions. In this project, we will isolate a large number of microorganisms from apple flowers in Connecticut. We evaluate their antagonistic activity against *E. amylovora* on detached apple flowers. Successful candidates with antagonistic activity will be sprayed to apple trees and determine their fire blight control efficacy. CAES will partnership with CT DoAg in knowledge dissemination and outreach.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

District of Columbia

Amount Awarded:	\$201,973.63	Number of Projects:	5
<ul style="list-style-type: none"> • UDC and the Daniel Alexander Payne Community Development Corporation’s Stop the Pipeline to Prison Program is proposing establishing an agricultural training program for returning citizens in Washington DC to address unemployment, healthy eating, and environmental awareness. Hustlers to Harvesters will train returning citizens with all the skills necessary to start their own specialty crop businesses or join the agricultural workforce. The 9-month program will enroll 10 individuals per year, over two years, helping to create pathways to an estimated 5 new businesses and 15 jobs in the agricultural supply chain. Hustlers to Harvesters will also be able to have all participants leave with recognized certificates in urban agriculture, environmental sustainability and nutrition and health, particularly around consuming more specialty crops. Through partnerships with existing food growers, food processing businesses, and food distribution organizations, returning citizens will have access to hands-on internships as well as pathways to starting their own businesses. • Rooftop Roots, a 501(c)(3) organization, and the University of the District of Columbia (UDC) will use three green roofs in the Washington, DC metropolitan area to conduct research on strawberry and tomato productivity, as well as train and educate students and community members on techniques for growing nutrient dense food in urban environments. The aim is to identify strawberry and tomato varieties that are particularly suited for growing on roofs and to increase the area workforce knowledgeable in urban agricultural production. • The UDC owned and operated Native Plant Nursery will establish a partnership with DC Urban Forestry Extension, the Urban Forestry Administration and nongovernmental organizations working in the field to increase the consumption and sales of specialty agroforestry crops in DC communities through mobilizing outreach and programing for planting in vacant lots and household recruitment for singletree planting. • University of the District of Columbia oversight 			

- The University of the District of Columbia (UDC) College of Agriculture, Urban Sustainability & Environmental Sciences (CAUSES) will roll out programs to process and preserve more specialty crops grown in the metro DC area and develop distribution channels for those new products within food deserts in DC. This project will address all elements of the specialty crop supply chain, with partners throughout the system, including City Blossoms' Mighty Greens program and DC Central Kitchen, among others. First, the program will organize community gleaning days to glean agricultural seconds from metro area farms. This will create more value for local farmers while also tracking the amount of food left in fields to demonstrate the embodied value of agricultural seconds. This produce will be processed in educational processing trainings, training community members to preserve specialty crops and create value-added products. We will provide technical assistance and processing space for local entrepreneurs to create value-added specialty crop products, particularly with crops that are not market quality.

Delaware Department of Agriculture

Amount Awarded:	\$299,428.88	Number of Projects:	7
<ul style="list-style-type: none"> • Charlotte's Secret Garden will plant a high density, diverse orchard (~350 trees) on 1 acre of land to demonstrate how small farms can provide CSAs (Community Supported Agriculture), farm markets and farmers markets with fresh, locally grown fruits through the full season (spring, summer and fall). The project will involve selecting and purchasing the trees, planting, installation of micro-sprinklers, tile drainage and trellis system to support the orchard, orchard and pest management, harvest and sale of fruit. The planting and management techniques and the budget and economics will be documented and shared with other farmers and potential farmers through workshops and articles. • Colonial School District (CSD) is requesting funds to establish farm-based education programming on its award winning 8-acre student-run farm with the objective to increase child and adult knowledge and awareness about gardening, agriculture, healthy eating, local foods and seasonality to subsequently increase attitudes toward, preferences for, and consumption of, fruits and vegetables. • The Fruit and Vegetable Growers Association of Delaware will be the partner in this project. In this project, the Fruit and Vegetable Growers Association of Delaware members will seek to improve the awareness with consumers of its members and the Specialty Crops that they grow in Delaware. The desired outcome will be increased consumption of fruits, vegetables, other specialty crops, and subsequent sales of specialty crops from Delaware farmers. This will be done through a coordinated marketing and promotion effort including developing a Delaware grown product, using electronic social media, point of purchase materials, and product labels. Research will also be conducted on the effectiveness of these approaches. • The University of Delaware, Department of Plant and Soil Sciences. The goal of our project is to utilize the recently funded lima bean genome to identify disease resistance genes from our diversity panel and to improve the marker system we have developed to deploy durable disease resistance genes in lima bean cultivars. • University of Delaware Weed Science will conduct research at the Carvel Research and Education Center on the use of overlapping residual herbicide programs for herbicide-resistant weed control in lima bean and pumpkin. Greenhouse studies will be conducted in winter of 2018 to determine if there are differences in crop varieties' response to s-metolachlor; and in 2018 and 2019 field studies to evaluate crop tolerance and weed control efficacy. Positive results will lead to additional management strategies for herbicide-resistant weeds in lima bean and pumpkins, but may also be applicable to other specialty crops. Results will be disseminated through extension meetings (DE Ag Week), publications (Weekly Crop Update and Regional Commercial Vegetable Production Recommendations) and field days. • Emmalea Ernest and Gordon Johnson from the University of Delaware Extension Vegetable & Fruit Program will test strategies to reduce the effects of heat stress on a variety of vegetable crops and demonstrate successful techniques to growers. • The University of Delaware Cooperative Extension vegetable program will be the partner in this project and will work with FMC Cooperation to evaluate the potential for sourcing food colorants and additives from vegetable waste from Delaware farms. Targeted initially will be unharvested and cull watermelons and pumpkins for carotene and lycopene pigments. Use of other vegetable waste will also be explored. 			

Florida Department of Agriculture and Consumer Services

Amount Awarded:	\$3,743,870.18	Number of Projects:	24
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- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The Center for Produce Safety will partner with Cornell University to develop reference data sets of whole genome sequencing data for *Listeria*. Whole genome sequencing (WGS) is a powerful “genetic fingerprinting” tool for foodborne pathogens. Routine use of WGS to “fingerprint” *Listeria monocytogenes* from humans and foods has considerably increased the number of disease outbreaks detected and traced back to specific foods, including produce. WGS also is used to identify instances in which a specific type of bacteria appears to survive (“persist”) in a given food processing facility, indicating a particular food safety risk. However, the ability to interpret WGS data is hampered by (i) a lack of WGS data for bacteria from sources other than humans and foods and (ii) the need to better define how likely closely related bacteria can be found in different locations. To address these challenges, the project team will collect bacteria representing *L. monocytogenes* and other *Listeria* spp. from environmental sources throughout the United States, including Florida, and perform WGS on these bacteria. Comprehensive comparisons among these bacterial isolates, along with isolates from produce-associated environments and human cases globally, will be used to define similarity cut-offs that identify closely related bacteria and the likelihood of closely related bacteria occurring in different locations. These results will facilitate more accurate use of whole genome sequencing to address produce food safety issues.
- The Center for Produce Safety will partner with the University of Florida to evaluate the application of chitosan microparticles to sanitize agricultural water. Water used for irrigation or processing of produce has been implicated as a source of pathogen contamination that can persist in aquatic systems. Therefore, irrigation water derived from surface water sources or flumes of wash water are often sanitized with disinfectants such as sodium hypochlorite, chlorine dioxide, and peroxyacetic acid. However, these treatments are only marginally effective and have potential toxicity. Thus, development of novel water treatment methods is needed. This research project will examine the application of chitosan microparticles as a possible pre-harvest treatment in irrigation water and/or as a post-harvest treatment in produce wash water. Chitosan is derived from the biopolymer chitin, which is abundant in crustacean shells and is a natural by-product of shellfish processing. Chitosan has applications as a flocculent, such as in industrial wastewater treatment, and has antimicrobial properties. The potential of chitosan as a sanitizer is that it offers an economical, biodegradable, and non-toxic alternative to toxic chemicals and that it does not promote resistance to antibiotics. Chitosan is “generally recognized as safe,” or GRAS, in other food applications, ensuring a high likelihood of acceptance for agricultural water applications. Studies will focus on reducing *Salmonella* and norovirus in natural water sources and on produce, and the feasibility and cost-effectiveness of practical applications will be assessed.
- Caladiums are a signature specialty crop for the Florida horticulture industry. Florida caladium growers produce essentially 100% of the caladium tubers needed by Florida greenhouse growers, nurseries, and landscapers. The crop yields of caladiums have dropped by ~50% over the last 10 years due to *Pythium* root rot, *Fusarium* tuber rot, *Rhizoctonia* tuber rot, Dasheen mosaic virus (DsMV), and Konjac mosaic virus (KoMV). Because of these diseases, caladium growers are struggling to produce caladiums profitably, and the number of caladium growers in Florida has shrunk by 40% over the last 15 years. Florida caladium growers have asked us to help eliminate these pathogens in their seed stock (tubers) of major commercial cultivars so that pathogen-eradicated seed stock can be used to replace disease infected seed stock. To address this urgent need, Kane’s team will produce 13,200 young plants from in vitro cultures (nuclear stock), grow the young plants, and produce seed tubers of 11 major cultivars chosen by growers. Polston’s team will index the nuclear stock and young plants to ensure the eradication of viruses and assess the yield impacts of DsMV and KoMV on caladiums. Deng’s team will conduct greenhouse and laboratory tests to ensure the genetic integrity and trueness-to-type of the newly produced seed stock. Polston, Kane, and Deng will design management practices for maintaining the seed tubers healthy in field production. The availability of these pathogen-eradicated seed tubers will provide rejuvenated planting stock and bring direct economic benefits to Florida caladium growers, distributors, greenhouse growers, nurseries, and landscapers.
- Strawberries are one of the most important specialty crops both in Florida and the nation, with a 2015 annual value of \$291 million and \$2.22 billion, respectively. Postharvest losses of fresh strawberries are conservatively estimated at 10% to 15% at the wholesale and retail levels. Postharvest decay is one of the most significant factors causing fresh strawberry fruit losses. Unfortunately, there are limited postharvest measures for decay control. This project will evaluate postharvest fungal decay control strategies on fresh Florida strawberries using plant-based essential oil products, many of which are registered as food-grade materials. In addition, the effects of these materials to reduce populations of generic *E. coli* in vitro and on inoculated fruit will be studied as a possible means to reduce food safety concerns of an unwashed product. The impact of these treatments on fruit quality attributes, including sensory (taste & aroma), and potential economic costs/returns will also be evaluated. It is expected that this project will develop at least one new postharvest strawberry treatment to reduce fruit decay, and possibly reduce microbes of food safety concern. This project would impact not only Florida’s strawberry industry, but also California’s and other strawberry producing states. New technologies and deliverables resulting from this project will be disseminated to strawberry growers, service companies, packers/shippers, retailers, researchers, consumers and the general public for the practical applications.

- Silk flies have become the most severe ear-feeding insect pests infesting sweet corn in Florida. Even when these insects are intensively managed with insecticides, unacceptable losses can occur. This project aims to develop a streamlined silk fly population monitoring tool, refine silk fly insecticidal control, and disseminate research results to the Florida sweet corn industry. Field experiments will identify the most attractive combination of fly lures available commercially, determine the most attractive colors and visual patterns, compare the performance of different trap types, and determine the relationship between trap captures in best-performing traps and silk fly field populations. Additionally, field experiments will evaluate the efficacy of baits used with insecticides and determine the optimal timing of insecticide applications. Research results will be disseminated during an extension workshop, but also through presentations at field days and publications in professional magazines and extension articles. One desired outcome of this project is stakeholder increased knowledge about science-based tools for management of silk flies. An associated outcome is the adoption of practices developed during this project, which is anticipated to increase cost savings and economic sustainability by increasing efficiency of silk fly insecticidal management. Thus, this project is expected to enhance the competitiveness of Florida sweet corn growers. This two-year project will be conducted primarily at the UF/IFAS Everglades REC in Belle Glade and Tropical REC in Homestead under the supervision of Drs. Julien Beuzelin and Dak Seal (UF/IFAS). Drs. Sandy Allan (USDA-ARS) and Chris Miller (Palm Beach County Extension) will be key collaborators.
- Vegetables are predominately grown using a plasticulture production system. Field set up which typically includes cultivation, bed shaping, fumigation, drip tape placement, and plastic mulch installation is labor intensive and expensive. Despite the high cost, only one crop is typically grown on the mulch covered beds. As a result, input costs are high and reliance on a single vegetable crop is risky due to volatility in the marketplace as well as competition from foreign markets. One potential solution that addresses all of these issues is the production of multiple crops on the same plastic mulch. This approach substantially reduces input costs per crop and diversification reduces overall risk and stabilizes grower income. The overall objective of this project is to provide vegetable growers with the production information needed to help them diversify and successfully grow multiple crops on the same plastic. To achieve this goal multiple field experiments will be conducted to identify optimal crop combinations and transplant times that minimize competition between crops and maximize economic return. In addition, we will adapt shield technology developed by Dr. Boyd's research team for use in strawberry cropping systems for use in vegetables. This equipment reduces the labor associated with the removal of one crop following the final harvest without harming the second crop that is growing on the same bed. All techniques will be evaluated in terms of economic benefit as well as the potential risk reduction and income stabilization due to crop diversification as well as increased resource use efficiency.
- The biological control of plant-parasitic nematodes is becoming an increasingly popular strategy for managing nematode damage in a variety of agricultural crops due to the withdrawal of many nematicides from the market. Nematode-suppressive soils with indigenous micro-flora that protects plants from nematode damage have been identified from different locations in Florida. Understanding the ecological factors that enable these antagonists to persist, compete, and function may improve the basis for using them in an integrated approach to manage nematodes. In the proposed study, we will employ advanced biological and molecular techniques for extensive analysis of the total microbial profile to unravel the microbial basis of root-knot nematode (RKN) suppression in the soil. We will also conduct field experiments to assess the effect of combining a commercial biocontrol product with other sustainable management strategies in enhancing the efficacy of the biocontrol products against RKN. We anticipate that the outcome of this study will lead to the identification of novel biological control agents for RKN management under Florida climatic conditions and in the development of management strategies that will enhance the efficacy and persistence of soil suppressiveness induced by biocontrol products against RKN in Florida's vegetable production. The duration of the research will be two years and experiments will be conducted at the University of Florida research and education unit, where high populations of RKN are known to exist. Dr. Mengistu's lab at UF, Gainesville will conduct the work in collaboration with participating grower, extension agents, and commercial representatives.

- The project has two desired outcomes, both of which are designed to determine the extent of the threat posed to Florida agriculture by the Q biotype of *Bemisia tabaci*, the sweetpotato whitefly. The first outcome will quantify the susceptibility of representative populations of the Q biotype whitefly to key insecticides. These resistance monitoring assays will provide information on how tolerant or susceptible the Q biotype populations are to insecticides commonly used to manage whiteflies in the state. This information will contribute to guidelines to growers for management of the Q biotype, and will be compared to the results of parallel tests of the B biotype to determine if the Q biotype is generally more resistant to insecticides, and therefore more of a threat to Florida agriculture. The second outcome will demonstrate whether the Q or B biotype is more competitive on common vegetable crops grown under Florida conditions of temperature and humidity. There is evidence from other countries that the B biotype colonizes certain key vegetable crops, including tomato, cucumber and cabbage, more efficiently than the Q biotype. A greater competitive advantage of the B biotype on tomato and other common Florida vegetables would explain why the Q biotype has not become established in field vegetables in spite of having been introduced into the state multiple times for over decade. Controlled competition studies will demonstrate the likelihood that the Q biotype will displace the B biotype in the field on key vegetable crops.
- The first desired outcome for this project is to positively identify the flatheaded borer pest in blueberries and understand its distribution in Florida. The identification of the flatheaded borer found in blueberries in the southeast and the extent of its injury are unknown. Our preliminary survey conducted in 2016 suggests that the distribution of this pest is extensive, with presence of the flatheaded borer confirmed at 9 out of 10 farms sampled in central Florida. The desired outcome will be accomplished by conducting a state-wide survey of the flatheaded borer in blueberries to determine the distribution of this pest in the major cropping areas. Panel traps will be established to evaluate adult populations and blueberry cane samples will be collected to evaluate larval populations for the purpose of identifying the flatheaded borer pest and determining the extent of damage in blueberries. The monitoring program will be shared with stakeholders to be implemented in the field. A second desired outcome is to develop management tactics that can be implemented to manage the flatheaded borer in blueberries. Potential management tactics include developing an effective insecticide rotation program that poses minimal harm to non-target organisms, identifying biological control agents present in the field, and identifying and eliminating alternate hosts in the surrounding habitats. Field-based and greenhouse experiments will be conducted to determine which management tactics will be the most effective to include in an integrated pest management program to control the flatheaded borer in blueberries.
- Fusarium wilt is a devastating disease of watermelon in Florida and the U.S. This pathogen has reemerged recently causing yield losses of 100% in extreme cases. There are many integrated pest management strategies, such as grafting, delayed planting, fumigation and fungicides, which are effective at controlling this pathogen. However, these strategies are only economically viable when the disease is present. This proposal is focused on integrating novel disease risk tools, a pre-season bioassay and climate decision support application, to mitigate the increased management costs associated with Fusarium wilt. The goal of this project is to develop integrated management strategies that utilize these tools that are economically viable for producers. Ultimately, both of these tools will be made available to producers, consultants and extension professionals through training and web resources. Relaying this information to stakeholders and understanding the economic impacts is critical to developing sustainable disease management of this disease. The extension personnel associated with this proposal will engage stakeholders about the utility of this tool through interviews and experiential learning opportunities with on-farm trials. This project will provide the watermelon industry with novel information about when, how and if integrated management techniques can or should be used for managing Fusarium wilt. Currently, there are no options available to producers that can assess disease risk until it has been observed in the field. Having tools that can provide risk information about this pathogen is a vital step to improved watermelon production in Florida.
- Squash and snapbean are those among most economically important vegetable crops in Florida and the USA. Due to the warm, humid climate in Florida, powdery mildew and halo blight is important and serious foliar disease in squash and snapbean, respectively. Management of these diseases is difficult due to lack of resistance in squash and snapbean varieties, the widespread presence of the pathogens in fields, negligible or no effect of cultural practices, and the development of resistance in populations of the pathogens. Nicotinamide adenine dinucleotide (NAD) is a strong SAR inducer. NAD is a ubiquitous electron carrier that participates in many metabolic pathways in plants. Exogenous application of NAD induces expression of pathogenesis-related (PR) genes in *Arabidopsis* and resistance to *Pseudomonas syringae* pv. *maculicola*. Our study showed that NAD also induces strong resistance to *P. syringae* pv. *tomato* DC3000 in *Arabidopsis*. Recently, it is also found that NAD induces resistance in citrus against citrus canker caused by *Xanthomonas citri* subsp. *citri*. The specific objectives of this proposal are to: (1) Evaluate NAD applied by various methods for its efficacy to control powdery mildew on squash and halo blight on snapbean; (2) Optimize application method for its best efficacy against the two diseases; (3) Determine the minimum rate of NAD that effectively control these diseases; (4) Investigate the mechanisms of disease resistance induced by NAD including resistance-related gene expression; and (5) Explore the potential for improved efficacy against these diseases by incorporating NAD with reduced fungicides/bactericides.

- Hops contain resinous compounds and essential oils used for flavoring craft beers. Because of the recent rapid growth in Florida's craft beer industry with an economic impact of more than \$2 billion, hops have the potential to provide new markets and high profitability to Florida's specialty crop industry. Our previous project identified three major challenges to successful hop production in Florida; environment (short day length), limited knowledge of cultivars suitable to Florida's climatic conditions, and limited knowledge of pests and management options. This project will address these issues to develop viable production methods to produce hops in Florida. Field trials will be conducted at the hop yard we established using a commercial trellis design in the previous project (Photo 1). First, we will assess the effectiveness of photoperiod extension by artificial lighting to control the timing of flowering for more efficient hop production. Second, we will continue the multi-year evaluation of more than 10 commercial cultivars in terms of cone yield and quality. Third, we will identify and monitor pest populations, determine differences in varietal susceptibility, and assess the efficacy of selected pesticides. Based on the research findings, we will develop recommendations on cultivars, management practices, and pest management. This information will be disseminated to growers through traditional meeting presentations, extension publications, and field tours. Florida growers will gain knowledge of suitable cultivars, efficient production practices, and pest management options for hop production. Our ultimate goal is to support the establishment of commercial hop production in Florida.
- South Florida State College (SFSC) is requesting \$150,101 to collaborate with Hardee County Industrial Development Authority to evaluate olives as a new specialty crop for Hardee County, Florida. As a longstanding citrus-producing county in Florida's Heartland, Hardee has been devastated by the impact of citrus greening. The local citrus growers are desperate to diversify their crop production with new specialty crops; however, under the financial strain of citrus greening, they need proven alternative crops to justify the investment. Many growers consider low-chill stone fruits, such as peaches, as some of the most promising new central Florida crops. While not yet in production in Florida's Heartland, Olives are a stone fruit with demonstrated success in north and central Florida, as well as international locations with climate and soil composition similar to that found in central and western Hardee County. Through this project, SFSC and Hardee County will engage in research, education, and extension activities designed to expand olive production in central Florida. The project team will evaluate the success of new low-chill olive varieties, develop agronomic practices and pest management recommendations for commercial olive production, evaluate irrigation practices to reduce ambient temperature and increase chill hours, and develop education and support programming for local growers to expand into olive production. By the end of the two-year project, the team will have identified ideal olive varieties for the Hardee County flatwoods region, published a series of grower support materials, and engaged 200 growers and producers in olive cultivation activities.
- Endemic incurable Huanglongbing disease (HLB, "greening") in Florida makes it virtually impossible to profitably grow citrus with conventional outdoor methods. In partnership with UF/IFAS research, many Florida fresh citrus growers are turning to screen house protected agriculture in order to physically exclude the Asian Citrus Psyllid (ACP) insect vector of HLB and thus ensure long-term HLB-free citrus trees. Although the screen houses, or "Citrus Undercover Production Systems" (CUPS) are designed to exclude the ACP with 50-mesh screen, there are small weaknesses in protection, like the doorways which are periodically opened for movement of people and equipment. Therefore it is critically important to frequently and comprehensively scout for psyllids inside the CUPS so that early corrective action can be taken to eradicate them and thus prevent the spread of HLB. Currently human scouts are used every 7 to 14 days to inspect insect traps and new leaf flush for signs of ACP. It is not feasible for scouts to inspect every tree that frequently, thus infestations of ACP could occur for some time until detected and considerable HLB disease could spread in the CUPS. In this project, we propose to develop and implement robotic artificial intelligence scouting platforms. Robotic platforms equipped with machine vision can scan every tree in the CUPS more rapidly than humans, and thus will improve the quality of integrated pest and disease management for fresh citrus in protected agriculture systems. The existing research CUPS at UF will be used as a test-bed for the first robotic prototypes.
- The desired outcomes of 'STEM Up Healthy Eating' is to teach Kindergarten through twelfth grade students about healthy eating while incorporating STEM applications into their school garden. These desired outcomes will be reached through three different tasks. The first task will be the distribution of 65 \$500 school garden mini-grants. Kindergarten through twelfth grade teachers will be eligible for these grants and they will be required to grow Florida specialty crops as well as use one lesson from one of our three school garden curricula. These gardens will encourage students to eat fresh fruits and vegetables, learn about healthy eating, and explore STEM related projects in their school garden. The second task will be the creation of a student STEM based activity newspaper that will allow teachers and students to see that agriculture is STEM. The newspaper will not only go into STEM specialty crop lessons and activities but also STEM related careers options in agriculture. This will encourage students to think about possible career options in agriculture other than just production, which is what most people think about when talking about agriculture. The third task will be teacher workshops. We will hold three workshops that include farm tours, three county workshops and one state two-day school garden workshop. Teachers will learn how to use their school gardens as a teaching tool to teacher all subject areas. They will also learn which specialty crops are grown in Florida and how to best incorporate those into their gardens.

- Tomato growers traditionally relied on methyl bromide as a soil fumigant for control of soil-borne pests. Following the loss of methyl bromide, tomato growers transitioned to a range of alternative fumigants with most relying on combinations of chloropicrin and 1,3-dichloropropene (1,3-D). Nutsedge management with fumigants tends to be variable and none of the alternatives adequately control broadleaf and grass weeds. Consequently, weed populations have increased over time and growers are looking for alternative management options that are effective and economically viable. The proposed research will help growers (1) identify effective herbicide-fumigant programs that adequately manage weeds and are economically viable, (2) determine the optimal chloropicrin:1,3-D ratio for nutsedge management, (3) identify safe and effective herbicide options that can be banded immediately prior to transplant or immediately after transplant, and (4) compare the costs and economic benefits of the evaluated management plans. The outcome of this research will be better weed management recommendations for tomato growers that integrate fumigants and herbicides. Emphasis will be placed on the identification of management plans that facilitate reduced agro-chemical inputs, increase crop yield, and increase economic return.
- Peach production in Florida often struggles due to uncertain weather conditions. Warm winters interferes with onset dormancy therefore, flowering becomes sporadic and continues throughout winter months resulting in non-uniform commercially unfit crop. The overall goal of this project is to improve peach production in Florida with help of plant growth regulators (PGRs). The expected outcome of this project is the successful use and identifying the effective rate of two dormancy related PGRs, abscisic acid (ABA; to induce dormancy), and hydrogen cyanamide (HC; to induce dormancy break/bud break) and complementing use of ABA with HC resulting in synchronized flowering, good fruit set, and reliable production. To achieve our goal the project will be divided in 4 objective, which includes evaluating the efficacy of exogenously applied ABA in inducing dormancy in peaches during late fall and required rate of HC to release dormancy; disseminating and demonstrating the peach growers for effective use of PGRs to improve production. To achieve these objectives plant growth regulator trials will be conducted under field conditions and their effect will be monitored throughout the duration of two years. The trees will be monitored for vegetative flush, flowering, bud development, fruit growth, and yield. The potential impact of this project will be availability of plant growth regulating tools to Florida peach growers to ensure a good crop in uncertain/anomalous weather conditions as well as reducing production cost/labor cost by reducing number of passes required for thinning and harvesting.
- Florida is the second largest strawberry producing state in the nation. However, the retail prices are high compared to the production volume of other states and they are getting higher each year (NASS, 2015). The ultimate goal of this project is to inform and guide specialty crops growers in real-time from planting through harvesting to achieve the measurable OMB outcomes of i) enabling a more sustainable and higher quality strawberry production while ii) improving our state's economy with higher and more profitable yields.
- Foliar diseases on fresh-market tomato are intensively managed through cultural and fungicide spray regimes in Florida. Despite this, yield losses still occur when environmental conditions are conducive to disease development. The goal of this project is improved integrated management of three common foliar diseases, specifically target spot, early blight, and late blight on tomato through targeted fungicide applications by creating an enhanced Decision Support System (DSS). The desired outcomes are increased disease management efficacy and reduction in losses, potential reduction in the amount of fungicides applied, decreased inputs associated with fungicide applications such as labor and fuel costs, and reduced environmental impacts. The USAblight DSS (published under the name DSS BlightPro), provides recommendations for fungicide applications based upon site-specific current and forecast weather data and disease forecasting tools to aid growers in deciding the best time and interval to apply fungicides. Preliminary spring 2014 data generated in tomato test plots in Immokalee showed a 40% reduction in the number of fungicide applications using the USAblight DSS while maintaining the same level of late blight management. In this grant, we will: 1) Develop an expanded DSS incorporating management recommendations for target spot and early blight fungal diseases; 2) validate the new DSS at UF to determine its suitability for use in Florida fields; and 3) conduct extension outreach to growers about the potential use of the DSS. Coordinated educational efforts will include presentations at grower meetings, field days, popular journal articles, extension publications, and/or newsletters.

- Bell pepper is an economically important specialty crop generating ~ \$468 million farm value and is one of the top 20 most-consumed raw vegetables in the United States. In Florida, bell peppers are cultivated on 17,500 acres producing a total farm value of \$183 million (USDA, 2007). Root-knot nematodes are a major disease-inducing agent affecting all stages of growth of bell peppers crop. These nematodes are important pathogens on many other vegetable crops too. Currently the most effective management solution for this disease problem is to fumigate the soil. But chemical control is less desirable because of its negative effects on the environment. An environmentally-friendly solution is the use of nematoderesistant pepper varieties. Despite our progress in understanding the genetics of nematode resistance in peppers, commercial bell pepper production in Florida depends on the use of non-resistant varieties. Therefore, the current project will address the root-knot nematode problem in peppers (a) by evaluating a nematode-resistant pepper rootstock for growing F1 hybrid bell peppers under field conditions and (b) by developing and testing a greenhouse screening method to identify additional germplasm resistant to the root-knot nematode. Bell peppers resistant to root-knot nematode will be of interest to all the bell pepper growers in Florida and in other states including California, New Mexico, Georgia and New York. We expect 40 farmers will utilize the technology and plant material developed after the project completion. In addition, we expect to reach two thousand people in the industry via news releases and extension education publications.
- Root-knot nematodes are the most economically damaging soilborne pathogens of tomato. Genetic resistance is a key component for their control, especially since the phase-out of methyl bromide. The Mi gene for nematode resistance is available in commercial varieties, but this gene is neither stable under high temperatures nor effective against all of the nematode spp. present in Florida, and there are increasing reports of resistance-breaking nematode strains. Thus, there is a significant need to develop Florida-adapted cultivars with improved nematode resistance. Conventional breeding requires years of selections under nematode pressure to produce useful cultivars. With current genome-editing technology, it is possible to introduce targeted DNA changes in genes, which have potential to produce improved traits to meet industry demand. We propose a science-based approach that combines classical genetics with genome-editing technology to rapidly develop durable resistance to root-knot nematodes in tomato—without compromising horticultural performance. The first objective of this effort is to develop genome-editing constructs, which inactivate parasitism genes in tomato. The second objective is to introduce construct-generated DNA changes in Florida-adapted tomato lines. The third objective is to optimize nematode bioassays to select for resistant plants. Our ultimate goal is to provide valuable modern tomato lines that can immediately be introduced into the tomato breeding program at the University of Florida and to the private sector. Our efforts would not only address the challenges and bottlenecks that accompany traditional breeding, but would provide tangible and long-lasting benefits to the tomato industries in Florida, and ultimately, around the world.
- The goal of this project is to develop molecular-based diagnostic test kits that are able to distinguish between insecticide-resistant and insecticide-susceptible insect pest populations in the field, greenhouse or nursery which will enable a grower to immediately choose an effective insecticide to control the pest and rotate mode of action of insecticides to slow the evolution of resistance. The first pest for which a kit will be developed is the American serpentine leafminer, *Liriomyza trifolii*. This leafminer is a serious pest of vegetable and ornamental crops throughout the world, especially in Florida, and has a long history of developing insecticide resistance to virtually every insecticide used to control it. Based on research published by Dr. Ferguson (J. Econ. Entomol. 103(6): 2197-2203. 2010) in which polymorphic DNA was identified that was unique to cyromazine and abamectin resistant leafminers, a colorimetric test kit will be developed that can be used in the field or greenhouse with minimal lab equipment. This work will take place at EntoGenomics LLC, Vero Beach, FL and University of Florida, IRREC, Fort Pierce, FL. Project will last for two years. Producers of vegetable and ornamental industries will benefit from this project by using the kit to identify insecticide resistant populations and take appropriate measures to control the pest. Leafminer collection and bioassays will be conducted at EntoGenomics by Dr. Ferguson and at the University of Florida, IRREC, Fort Pierce, FL (Dr. Qureshi). The molecular biology research will be conducted by Dr. Thomas Prychitko, Helix Biological Labs, Detroit, Michigan.
- Gray leaf spot, caused by the pathogen *Pyricularia grisea*, is one of the two most damaging diseases of St. Augustine grass in Florida. Although repeated applications of fungicides can prevent the disease from becoming epidemic on the turfgrass, it significantly increases the turfgrass maintenance costs to sod producers, and is impractical for management of turfgrass in the residential areas due to lack of home owners' knowledge about disease control on their lawns. Utilization of host-plant resistance is a method with advantages of controlling disease effectively, reducing turfgrass maintenance costs, and being environmentally sound and user-friendly. In this project, we propose to use plant breeding approach to screen for high resistant plants in a segregating population, determine genetics of the resistance, identify molecular markers associated with the resistance, and select progenies that have combined the resistance with good turfgrass quality. The anticipated results should be helpful for determination of the suitable breeding method to facilitate integration of the resistance into adapted cultivars. The outcomes of this project will play a key role in development of resistant cultivars and their use in sod production, landscaping, and home lawns in Florida. Use of resistant varieties is not only important to the sustainability of the sod producing industry but also critical to the maintenance of high quality turfgrass in the Florida residential areas.

Georgia Department of Agriculture

Amount Awarded:

\$1,122,618.00

Number of Projects:

14

- The production, management and marketing of specialty crops in Georgia is ever changing with new technologies, new practices, new regulations and new management opportunities. The Georgia Fruit and Vegetable Growers Association will plan and coordinate a four-day educational conference and trade show to provide the latest and most current research based educational information on pest management techniques, production practices, regulatory issues, sustainability needs, food safety guidelines, etc.
- Georgia Grown will partner with the Atlanta Braves for the “Farm to Field” Promotion, which will promote and sell specialty crops at Braves games, at Battery Park and on Braves radio throughout the 2018 Braves season. The Braves have opened a new stadium in Metro Atlanta and this would be a unique partnership to market specialty crops directly to consumers. This would take place using Braves’ press releases, digital/social media, print promotion, and on-site events including at least 5 farmers markets at The Battery. Previous Georgia Grown efforts have focused on food service and retail. This would be the first promotion in partnership with a sporting venue.
- The Georgia Pecan Growers Association (GPGA) will launch a marketing campaign for Georgia pecans for an eCommerce virtual storefront that specifically promotes and sells Georgia pecans in the Chinese and Asian markets. In order to accomplish the goal of increasing sales in one of the world’s largest economies, GPGA will utilize the online storefront, as well as use on-the-ground activities in China that advertise to importers, consumers, and food service professionals.
- The Georgia Citrus Association (GCA) will mitigate the spread of diseases such as citrus greening and pests throughout its membership-area by helping to develop and implement a Citrus Health Management Program (CHMP). The GCA, in collaboration with UGA Extension, will educate its membership, as well as other citrus stakeholders, about CHMP compliance requirements through its website, association meetings, training, expert consultant visits, regional cooperatives, field days, briefings and presentations at various agriculture-related expos and conferences.
- A key element of any marketing program is direct contact with customers who could purchase the product or service you sell. To broaden the reach of Georgia’s specialty crop producers, GFVGA is working with Georgia growers, commodity organizations, and agribusiness companies to feature the states produce industry in a GEORGIA GROWN pavilion at the 2017 PMA Fresh Summit in New Orleans, LA. Held in October, this major international event will have over 20,000 produce industry leaders, including retail and food service buyers, attending and looking for new suppliers, gathering new product information and investigating new technologies. This event offers Georgia growers and suppliers a great opportunity to have face time with potential customers.
- The Georgia Peach Council, along with the University of Georgia, will determine system-wide probabilities of *Listeria monocytogenes* for transference from non-food contact surfaces to food contact surfaces within stone fruit packinghouses. In addition, the study of an inline UV light system will determine if a validated kill-step will be achieved. Outcomes: 1) Attachment potential of *L. monocytogenes* to stone fruit contact materials and handling equipment 2) Clean-ability of stone fruit contact materials and handling equipment 3) Transferability of *L. monocytogenes* from non-food contact zones to food zones and from contact surfaces to fruits within packinghouse facilities 4) How the information generated by the project improve the awareness of stone fruit packers in terms of fruit safety 5) How inline UV light systems provide destruction of contaminants. Tasks I: Identify the source of *Listeria* contamination along packing line: Surfaces along the harvest chain will be sampled to determine the source of natural *Listeria* load. II: Determine the transferability of *Listeria* from non-food to food areas: The transferability of *Listeria* will be assessed by testing the presence of the pathogens in the aerosols. III: Evaluate microbe accumulation on different equipment and padding materials: Materials used in packing equipment will be examined for their ability to retain microorganisms as well as during sanitizing treatment. Validation studies of the inline UV light system will be conducted.
- Researchers at Kennesaw State University will develop and operate a self-contained, low cost, low footprint, and high yield mushroom cultivation module. This project will establish underutilized edible mushroom varieties as commercially viable specialty crops as well as dissociate production from seasonal limitations and arable land, allowing for targeting underemployed and low socioeconomic communities with production facilities as a form of economic stimulus. The production of a prototype module, followed by evaluation of the spectrum of diversity of edible mushrooms compatible with the system and finally a 12-month production cycle with the best performing mushroom variety will allow for evaluation of the profitability of the system and a full comparison with currently existing cultivation methodologies.

- At the University of Georgia (Griffin Campus), Fraser fir (*Abies fraseri*) and Momi fir (*Abies firma*) embryos will be extracted from seeds collected from trees throughout Georgia and neighboring states. These embryos will be subjected to the clonal propagation processes of somatic embryogenesis (SE) in an attempt to establish somatic embryo cultures from superior trees. These cultures of somatic embryos will then be cultured in specialized bioreactors at Georgia Tech to attempt the production of 1000's of SE seedlings that are clonal copies of the seed from the original superior tree. The seedlings will then be grown throughout the state to confirm the superior fir selection's ability to grow throughout Georgia and the southeast. This increase in availability of superior Momi fir seedlings has the potential to vastly increase the growing range of Fraser fir grafts as well as the ability to supply superior Momi and Fraser firs clones. Outcomes could provide two very desirable Christmas tree species as well as excellent ornamental species produced and grown in Georgia and the Southeast. The Fraser fir SE system could also provide the ground work for future grants dealing with transformation of Fraser fir for *Phytophthora* resistance.
- The University of Georgia, in cooperation with the Georgia Wine Producers, will expand and improve bunch wine grape production in Georgia. Two objectives are central to this goal: (1) establishment and evaluation of the suitability of newly-bred, unnamed, high *Vitis vinifera* parentage, Pierce's Disease (PD) tolerant grapevines across Georgia's regional climates that confer varying degrees of PD threat, and (2) refinement of canopy fruit-zone management to reduce fungal disease rot incidence and severity, and improve wine quality potential.
- The University of Georgia will reduce fungicide application in watermelon fields through the development of on-site assays for early detection of gummy stem blight (GSB; *Stagonosporopsis* spp.) inoculum in watermelon fields and transplant greenhouses. The outcomes of this project include development of a detection method for the presence of the pathogen that will enable growers to make informed decisions on when to initiate fungicide applications. Based on *Stagonosporopsis* species identification and knowledge of status of fungicide resistance (tebuconazole and boscalid), growers will also be able to make informed decisions on the type and rotation of fungicide to use
- Blueberry is a major specialty crop grown in Georgia and across the Southeastern US. In 2015, Georgia ranked third in the US in total blueberry production and accounted for over 50% of the acreage and tons produced in the Southeast. In Georgia, the blueberry industry consists of two types: southern highbush and rabbit eye. The goal of the study is to examine the major cultivars of southern highbush and rabbit eye currently produced in Georgia and to compare them to major northern highbush blueberry varieties that compose the largest portion of the overall blueberry market in North America. The University of Georgia will work closely with the Georgia blueberry industry to evaluate fruit quality of the major varieties within each blueberry type for fruit physicochemical and nutritional qualities and their relationships to consumer acceptability. Understanding these relationships will allow producers, marketers and retailers a better knowledge of fruit quality attributes of Georgia blueberries and how they objectively compare to northern highbush varieties. This information may also help to prevent against Georgia grown blueberries receiving a lowered price point as compared to other blueberry varieties due to subjective bias. Results from this work may also help Georgia blueberry producers more accurately target specific markets for different varieties depending on market preferences of various quality parameters, which will in turn help to deliver the best quality fruit possible to consumers. The results from this study should help in maintaining, and even increasing Georgia's blueberry market share, and hence profits for the Georgia blueberry industry.
- Plant-parasitic nematodes can only be marginally controlled by cultural turfgrass management techniques. In many cases, chemical control is often necessary on golf courses, sports fields and non-residential landscapes. Environmental stewardship, overreliance on chemical control, and increasing concerns about pesticide resistance has led turf grass managers to examine alternative methods that are effective and environmentally friendly. Therefore, The University of Georgia (Athens) will be involved in achieving management of plant-parasitic nematodes of turf grass by either developing an environment friendly biological control strategy and/or less toxic chemical control method to reduce nematode population densities below their economic threshold level.
- The Vidalia onion has long been hailed as the pioneer of sweet onions. For over 80 years farmers have harvested and packed Georgia's state vegetable. Over the years many things have changed: the way onions are planted and harvested, the varieties that are planted, and unfortunately the competition. While onion consumption continues to increase among all demographics, the notable prestige surrounding our signature specialty crop has declined. Consumers have been afforded a large variety of sweet onions year round from many locations and over time the distinctive features and taste for the Vidalia onion have been lost amongst the produce section. This project will seek to highlight unique characteristics of Vidalia Onions as we differentiate the Vidalia Onion against the general sweet onion market. By reinforcing our project, titled "Only Vidalia", we will drive demand by highlighting the uniqueness of Vidalia Onions through their limited season and availability. Additionally, we will create content that educates online food influencers and a retail nutritionist with storage/handling techniques as well as innovative recipes that create meaningful dishes that capture and celebrate the lore and culture of our unique specialty crop..

- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Guam Department of Agriculture

Amount Awarded:	\$203,840.64	Number of Projects:	1
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- The University of Guam in collaboration with Guam Department of Agriculture will educate and train members of Guam community to produce orchids professionally and efficiently. The main goal is to train workers capable of sustainable production of healthy orchids in quantities suppressing an influx of foreign plants to the local floral market. We will also create an “Orchid grower” certificate program that would officially sanction adequate competence in tissue culture and orchid nursery skills.

Hawaii Department of Agriculture

Amount Awarded:	\$426,984.59	Number of Projects:	12
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- The Hawaii Export Nursery Association will continue to establish the Hawaii Potted Tropical Plant Brand as superior plant products through national marketing campaign activities. HENA’s marketing campaign will further strengthen the viability of the Hawaii potted tropical plant industry and increase product sales by: 1) hosting the 2018 Midpacific Horticultural Conference & Expo (MIDPAC) on the Big Island of Hawaii in August, 2018 and 2) marketing Hawaii product to national industry platforms.
- Mauka Vista Farms LLC will enhance the competitiveness of locally grown peppercorn through increasing awareness and access to product and plant material by creating and disseminating a tailored, detailed production model demonstrating the viability and profitability of peppercorn as a specialty crop in Hawaii.
- Hawaii State Department of Agriculture oversight
- The University of Hawaii College of Tropical Agriculture and Human Resources (CTAHR) Cooperative Extension Services looks to evaluate and demonstrate through workshops and field days, a low input method for banana macro-propagation to increase the availability of potentially clean banana planting material to growers across the State of Hawaii. The project looks to identify strategies that will make this propagation method more efficient and demonstrate these findings to Hawaii banana growers. The project will also validate a rapid method for testing Banana Bunchy Top Virus infected plants in the field and provide this service to growers across the State. Access to rapid diagnostic services can allow growers to minimize the spread of the virus in the field as well as provide them with the ability to select planting material from clean plants.
- Hawaii Forest Industry Association (HFIA) will work with Hawaii Agriculture Research Center (HARC) to enhance the competitiveness of Christmas trees by producing locally-grown Christmas trees to replace imported trees; reduce the introduction of alien pest species with imported trees; and disseminate methods and results to stakeholders through grower meetings and field days.

Outcomes: Field day attended by 25 potential growers; grower meetings attended by 30 participants; 2,000 seeds propagated from 20 seed sources; 400 trees planted and in pots; 3 planted acres maintained; 8 collaborator sites; 10 species demonstrated; 80% survival rate of seedlings; 55 evaluation surveys with 90% rating their experience Good or Excellent; 85% of surveys will indicate the participant will use the information learned at the field days or grower meetings; 2 press releases; 2 e-news articles; webpage updated. The project will demonstrate that conifer species can be grown at mid to low elevations and identify the species and cultivars that produce acceptable Christmas trees – in pots and in the ground. Outplantings at different elevations will be done with collaborators. This project will complement HFIA’s higher elevation Douglas fir plantings to help expand a fledgling local Christmas tree industry by identifying a variety of species to replace imported trees at different elevations. Leyland Cypress (xCupressocyparis leylandii), Norfolk or Cooke Island Pine (Araucaria sp.), Monterey Pine (Pinus radiata) and Cypress species (Cupressus spp) are potential species. This effort could lead to reduced imported container stock; reduced alien species introductions; and reduced workload of State Agricultural inspectors.

- Oahu Resource Conservation and Development Council (Oahu RC&D) will increase cacao production through grower adoption of best practices for orchard management. This will be achieved through the production of four workshops to deliver training and demonstration of best practices applied to both the establishment and maintenance of cacao orchards. Participants will increase understanding of varietal selection, establishment methods and pruning; and be afforded opportunities to connect with key service providers, including producers and sources of cacao varieties that are suited for Hawaii. Information will be shared with field day participants and the broader industry via fact sheets and tutorial videos. The field days and resource materials will expand opportunities for producers to successfully implement best practices and increase yields, creating opportunity for Hawaii's cacao industry to grow quickly and achieve adequate quality and quantity of harvest to capture economies of scale.
- High density mango plantings have proven to be more profitable in India, Thailand, Australia and has become the standard in many regions. The technology is proven to increase yields (~2x) and lower long-term maintenance and harvest costs, leaving Hawaii mango farmers at a significant disadvantage. The large upfront capital costs have prevented Hawaii growers from adapting this technology. The project will attempt to address this uncertainty by working with an established farmer to demonstrate the significant advantages of high density plantings. Ultimately, the project will give Hawaii farmers the economic data needed to justify the upfront capital costs and aid in securing investment in such projects. The project will be carried out by the Hawaii Agricultural Research Center (HARC), a non-profit 501(c)(3) organization in collaboration with Wayne Ogasawara at the Millilani Agricultural Park. The project tasks are:
 - production of plant material
 - planting at high density
 - training/pruning trees
 - host field days to demonstrate planting/training/pruning techniques
 The project tasks are designed to ensure the following desired outcomes are met:
 - Enhance the competitiveness of mango production through greater capacity of sustainable practices of production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and conservation of resources.
 - Enhance the competitiveness of mango production through more sustainable, diverse, and resilient crop systems.
- The Molokai Homestead Farmers Alliance (MHFA) will take the lead role in an island wide educational initiative to develop Organic Butternut Squash & Kalo Farmers to meet a growing demand for organic specialty crops by retailers. The project will develop farmers through training and increase awareness of organic butternut squash & kalo through an education initiative.

The outcomes will be measured by the number of participants to include the youth, adults, Kupuna (elders), and homestead beneficiaries of Molokai who will gain knowledge of how to plant, grow, harvest and of the different techniques of growing organic butternut squash & taro. The participants will also learn how to prepare the Organic Butternut Squash & Kalo at the Lanikeha Certified Kitchen where they will be taught the health and cultural benefits and the economic comparison of organic and conventional butternut squash & taro.

To achieve the educational initiative goal of the project, the project staff will provide monthly workshop meetings for participants and other stakeholders where the staff will have classroom teaching, presentations, and demonstrations. Additionally, the students of Molokai High and Intermediate School, under the direction of the Hawaiian Immersion Kumu (beloved teacher) Iolani Kuoha, will partner with the project staff to post the workshop activities on YouTube and Facebook and other media to make the information available to interested agriculturalists statewide.
- The University of Hawaii will evaluate chickpea suitability for mechanical planting and harvesting and agronomical treatments (spacing and fertilization) in different locations in Hawaii. Expected Outcomes of the project include:
 - 1) Improved decision making by growers with regard to introducing new crops and developing value-added products;
 - 2) Establish a minimum of five new chickpea growers and areas planted with chickpea ranging from 10 to 30 acres statewide by the end of first year of the project;
 - 3) Proof of concept on chickpeas will result in application to other legume crops. The project staff are looking to add other legume crops (adzuki, pinto, and cowpea) that share same growth of chickpea, applicable for both consumption and value-added production, suitable for mechanical harvest, and fall within the specialty crops criteria and objectives;
 - 4) Enhanced capacity of cooperative extension agents and other agricultural professionals to serve stakeholders with regard to growing, processing, and marketing specialty crops.

The project includes collaboration with the NRCS Plant Material Center on Molokai and the Pacific Biodiesel Co. on Maui to use the facilities and equipment (planter and combine machine) for the mechanical planting and harvesting (objective 1) in addition to the University's research stations for the agronomical treatments (objective 2) during the project 2 year duration. Value-added products (objective 3) will be conducted in collaboration with the Chic naturals Co. on Maui during the project 2 year duration. Dissemination of the project findings (Objective 4) will be conducted through 4 field days (2/year) on different Hawaiian Islands.

- The University of Hawaii will develop non-chemical based pest management strategies for specialty organic cucumber production by integrating insect exclusion greenhouse with companion plantings of ground cover, green manure and insectary plants, and disseminating results to stakeholders through statewide farmers training programs and field days. Cucumber is a high demand vegetable crop but its high fertilizer need and pest pressure are challenging for organic farmers to produce in Hawaii. This project will address the challenges of managing economically important pests (melon flies, pickle worms, plant-parasitic nematodes, and weeds) of cucumber with non-chemical approaches, while reducing fertilizer inputs and promoting local fertilizer use. Specific objectives are:
 - 1) Design pollinator and natural-enemy friendly greenhouses using retractable walls for insect management in organic cucumber production systems;
 - 2) Demonstrate sunn hemp as a border insectary crop and green manure to reduce fertilizer and insecticide inputs;
 - 3) Determine if companion planting of mint can provide value added ground cover as well as sustainable weed and nematode pest management in a cucumber agroecosystem;
 - 4) Develop a user-friendly fertilizer calibration method for prolific mint oil production in cucumber/mint intercropping system; and
 - 5) Enhance the competitiveness of cucumber crop production through diversification of specialty markets.
 Project staff will evaluate these novel cucumber farming approaches by collecting data from field trials at five participating farmers' fields, distribute results outcome to beginning farmers through The Kohala Center Initiative, new farmers through GoFarm Hawaii, a new farmers training program, local and immigrant farmers under CTAHR Local and Immigrant Farmers' Education (LIFE) program, and socially disadvantage farmers in training at the Waiawa Correction Center, Oahu. It is anticipated that the success of the project will enhance the competitiveness of cucumber crop production in Hawaii vs imported cucumbers.
- 1. Pacific Gateway Center (PGC) will work with the University of Hawaii at Manoa, Department of Tropical Plant and Soil Sciences (TPSS) faculty, Hawaii Farm Bureau Federation (HFBF), and the Hawaii Department of Agriculture (HDOA) to execute its "Gourmet Potato Medley Crop" project.
 2. This project will use data gathered by the University of Hawaii at Manoa Extension Services agents to measure the cost of production, yield, and pest control for eight-varieties of potato.
 3. The project will demonstrate the most cost effective varieties, practices and distribution methods for growing potatoes for niche markets in Hawaii, and share the findings with growers using a variety of teaching methods including field workshops and a presentation at the HFBF Annual Convention, whose members represent farmers from chapters statewide.
- 1. Hawaii Department of Agriculture (HDOA)
 2. Continuation of the "Hawaii Grown Specialty Crops Marketing Campaign" that was funded by the SCBGP FY15 grant. HDOA will contract with DTL, LLC to continue the campaign started in April 2017 to provide marketing materials to commodity groups and associations representing specialty crops. The current campaign is due to end in September 2018. Year 2 will expand to reach the commodity groups not included in the first campaign and provide reorders for some of the groups that participated in the initial campaign.
 3. HDOA will provide DTL, LLC a list of the commodity groups not included in the first campaign and will contact the commodity groups from the first campaign to determine if a reorder would be placed, based on the number of members represented by the commodity group and contractor feedback.

Idaho State Department of Agriculture

Amount Awarded:	\$1,760,504.91	Number of Projects:	14
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- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The University of Idaho will develop an early warning system to alert growers to the risk of foliar potato diseases based on state-of-the-art spore detection technology and weather data. This will increase the competitiveness of Idaho potato growers by ensuring timely and optimum treatment with fungicides. Recently the University of Idaho with potato industry partners have invested in a network of 14 state of the art spore samplers. This project will optimise their use as an early warning system through correlating disease with spore populations, linking weather data to spore populations and ultimately produce a sophisticated decision support system providing growers with near real-time effective disease management recommendations.

- Idaho Bean Commission's Director Andi Woolf-Weibye, located at 821 W State St. Boise, ID 83702, together with researchers from University of Idaho and Oregon State University will conduct a breeding project to develop advanced new yellow bean lines with enhanced color and larger seed size and exhibiting high virus resistance. Yellow beans, also referred to as Peruano or Mayocoba types, represent new and emerging market classes in the U.S. Yellow beans have been grown for centuries in South and Central America, and immigrants to the U.S. have created a demand for these types. Traditional varieties are not optimally adapted to production in the U.S. Recently, Oregon State University released a new disease resistant variety. Marker assisted selection using improved molecular markers will be used to verify the transfer of virus resistance genes in recently developed F1 materials that are to be planted in the field in 2017 and evaluated for segregation of seed size and color in successive generations with the goal of producing fixed advanced lines for further testing and eventual variety release. Virus resistant new lines will be selected following challenge inoculations with Bean common mosaic virus, Bean common mosaic necrosis virus, and Beet curly top virus.
- The Idaho Potato Commission, led by Traci Lofthus, International Marketing Director, will use new and traditional marketing and promotional methods and tools to maintain and grow established markets, develop targeted markets and explore opportunities in new overseas markets.
- The University of Idaho will develop products to improve potato production and storage that target society's need for safer and more environmentally friendly natural alternatives to synthetic compounds. More specifically, natural chemicals from seed meals produced by members of the Brassicaceae (mustard family) will be used to yield a nematicide to control the potato cyst nematode (PCN, *Globodera pallida*) and a sprout inhibitor for stored potatoes. Efficacy evaluation and commercialization of the formulated products will be achieved through collaborations with business partners.
- Boise State University will develop an acrylamide testing protocol using near infrared (NIR) spectrophotometry that will provide accurate product label content and ensure compliance with food safety regulations including those imposed by the European Food Safety Authority and California Proposition 65. Dr. Owen McDougal (Boise State University Department of Chemistry & Biochemistry) will lead a team of researchers (Dr. Shibani Basu & Daniel Pfalmer) to evaluate the acrylamide content across a variety of industrial processed potato products using NIR and liquid chromatography mass spectrometry based reference standard methods. The result of this project will be a fast, accurate, and economical method to quantitate acrylamide to meet current and anticipated food safety regulations aimed at ensuring potato product quality assurance standards are met. The proposed NIR acrylamide test method will be easily implemented by Idaho food processors to guarantee the competitiveness of industrial processed potato products for distribution domestically and internationally.
- The Idaho Apple Commission will establish an agreement with the University of Idaho Pomology Program to conduct a research to improve fruit quality in 'Honey Crisp' apple. Among the new generation of apple cultivars, 'Honey Crisp' has gained extremely high popularity because of its crispiness, juiciness, and extraordinary flavor. This cultivar, nevertheless, suffers from poor quality, particularly bitter pit disorder which is due to the lack of sufficient calcium (Ca) or nitrogen/Ca ratio. Rootstock and fruit thinning can influence a wide range of physiological characteristics and tree performance of the scion cultivar, including tree vigor, precocity, fireblight, mineral nutrient uptake, and fruit quality attributes, including bitter pit. As the world population increases, the use of size-controlling rootstock becomes essential for establishment of high-density orchards to increase yield efficiency. Rootstock performance and consequence of fruit thinning and their impacts on fruit quality need to be tested in each climate before it is recommended for commercial plantings. The project leader introduced and established a high technology 'Honey Crisp' apple orchard with five of the newest rootstocks, each with 8-12 replications at the U of I Parma Research and Extension Center in 2014. He also cooperated with Henggeler's Packing House and established a 20-acre 'Honey Crisp' on Bud 9 rootstock orchard at Parma, Idaho in 2014. These 4-years old trees are at an excellent age for data collection. Project partners propose to study the influence of these rootstocks and three levels of thinning on precocity, yield, leaf and minerals, and fruit quality and disorders at harvest and after storage during 2017-2019.
- Idaho Bean Commission's Board along with Director Andi Woolf-Weibye, located at 821 W State St. Boise, ID 83702, will build upon previous efforts in Latin America to demonstrate the value of investing in certified disease free Idaho seed by solidifying the relationships and contacts that have already been made, making new contacts and perfecting the Costa Rican red bean variety, furthering that knowledge and experience into Puerto Rico and other Latin American countries.

- Idaho Preferred®, a program within the Market Development Division of the Idaho State Department of Agriculture, will continue its successful promotion of specialty crops through television advertising, social media, public relations and retail promotions. The television advertising campaign will include six weeks of 15 second ads that promote specialty crops. These ads will air in conjunction with an on-the-road retail tour that will include stops at retailers across the state to promote seasonal specialty crops with radio remotes, on-site demos, sampling and events. Social media will help promote the tour and events as well as increase consumer awareness of seasonal specialty crops. This project will build on a similar project funded in 2016 but results are not yet available as that project will not be completed until late fall 2017. As a result of this three-prong promotion, sales of specialty crops will increase by \$1.5 million over 2015 baseline data.
- Idaho State University researchers will focus on developing an accurate, robust, and scalable system using Unmanned Aircraft Systems (UAS) equipped with a hyperspectral sensor to detect and map individual Potato Virus Y (PVY) infected plants within potato seed-producing agro-ecosystems. The project anticipates detecting PVY-infected plants with accuracies of 90 percent or better using a machine learning classifier approach, a significant improvement over current industry practices. Anticipated results are dramatic reductions in grower dependency on pesticide control, fertilizer, water, fuel, and equipment inputs and improve yields and quality of potato seed stock for both seed growers and commercial potato producers. Expected outcomes include the delivery of near real-time solutions to growers to rapidly detect and mitigate for PVY in the agroecosystem.
- The Idaho wine and grape industry has steadily grown from 11 wineries to over 50 in fourteen years. The driving force of this growth has come from the Idaho Grape Growers and Wine Producers Commission (IWC) with their commitment to ensuring quality education is available to nurture optimal characteristics of the wine grape from vine to bottle. Led by the Executive Director, Moya Dolsby, the IWC (821 W State Street, Boise, ID 83702) has been fortunate to receive specialty crop block grant funds to assist with continued growth of the industry while safeguarding the quality the industry has become known for. The goal of this grant is to provide Idaho's wine industry with opportunities to further their knowledge, experience and skill, which will continue to improve the industry as a whole. Several educational opportunities have been offered to the industry in the past were met with outstanding participation. The IWC would like to continue this momentum, through strong leadership, targeted educational seminars and opportunities and quality resources. The IWC believes knowledge will help multiple avenues to flourish. More knowledge will lead to a higher quality and overall better products which means higher yields will be available with fewer issues and disease, therefore increasing access to this specialty crop.
- Over the last decade, the Idaho wine industry has seen tremendous growth in the quality of wine being produced along with the caliber of marketing. The Idaho Grape Growers and Wine Producers Commission (IWC), led by Executive Director, Moya Dolsby, (821 West State Street, Boise, ID 83702) has long been an advocate for the wine grape growers and winemakers of the State of Idaho. Dolsby will continue to guide all project elements associated with moving the industry forward in order to see improvements and growth. Elements identified as beneficial to continuing to assist the industry's growth include visual and interactive components of digital content through the IWC website and events, media relationships via press visits and tours and visual promotions. The Idaho wine industry has seen growth in numbers and improved quality. Since the early 2000s, Idaho's wine industry has grown from eleven wineries to over fifty throughout the state. These wineries are accompanied by over 1,300 acres of wine grape producing vineyards. With the work accomplished through this project and the elements contributing to it, the IWC hopes to continue advancing the quality, promotion and education level of the industry.
- The proposal outlines a project that will be conducted by the Idaho-Eastern Oregon Onion Export Committee (IEOOC). Idaho and Eastern Oregon's crop is 90 percent yellow onions and it is important to stay in front of the Mexico retailers, foodservice professionals, importers, and consumers and let them know of the versatility, the availability, and the benefits of yellow onions. The project includes continuing the Yellow Onion Promotion in Mexico, participation in two international trade missions, and one international trade show. The Yellow Onion Promotion offers Mexico retailers promotional assistance of Idaho and Eastern Oregon yellow onions, and has a culinary outreach promotion to build awareness with chefs early in their careers. Because of the need to increase market share in other countries, the Export Committee will add additional countries to its focus. International Trade Shows and Trade Missions, which are included in the project, allow for committee and industry members to travel to other countries, and evaluate the possibilities for exports from Idaho and Eastern Oregon into a given country.
- The University of Idaho will develop best management practices for controlling soil-borne diseases of onion, this will include fungicide and biopesticide based alternatives to fumigation, the development of predictive diagnostic assays for key soil-borne pathogens and new ways of determining the soil health status of an onion soil. These outcomes will be achieved through: 1. The monitoring of 100 onion fields from pre-planting to harvest correlating DNA levels with disease observations with microbial community analysis undertaken on key sites. 2. Two years of field trials evaluating a range of fumigation, fungicide and biopesticide treatments incorporating pre-planting diagnostic data and measures of soil health to determine economic thresholds for each management practice.

Illinois Department of Agriculture

Amount Awarded:

\$551,866.51

Number of Projects:

11

- The Illinois Specialty Growers Association (ISGA) will offer educational opportunities for specialty crop farmers at four regional programs and at the annual Illinois Specialty Crop, Agritourism, and Organic Conference. This project will provide specialty crop growers the opportunity to become informed on production and marketing topics pertaining to their industry, including keeping up-to-date on some of the newest methods and techniques to ensure top grower performance.
- The University of Illinois will investigate the impact of alternate water sources (tile water, rainwater, and treated wastewater) on the crop quality, impact on soil quality, and potential for contamination for specialty crop (tomato and herbs) production in Illinois and disseminate results to stakeholders through grower meetings and field days.
- This project aims to expand access to and demand for fresh and healthy produce and nutrition knowledge in low-income/limited access (LI/LA) populations in Urbana and Champaign.
- The Land Connection will address the need for greater knowledge about, and access to, Illinois specialty crops in order to increase the competitiveness and boost sales of specialty crops in Illinois. The project goals are to (1) to increase consumer knowledge of the availability, nutritional value, and ways to prepare and enjoy Illinois specialty crops, and (2) to increase sales of Illinois specialty crops, thereby improving the overall strength of the Illinois specialty crop industry. To accomplish these objectives, we will develop fourteen radio shows focused on specialty crops and create podcasts from those radio shows. We will also work with a local dietician and chef to create nutrition cards with use and storage guidelines to encourage the use of more Illinois specialty crops. To promote these activities, we will also plan and execute a multi-pronged outreach campaign, with outputs including newspaper articles, blogs, articles, flyers, and social media engagement.
- Good Business for Local Food combines two of FamilyFarmed's most impactful initiatives: our farmer training program, which helps farmers meet buyers' expectations and food safety best practices; and our Good Food Expo, which will highlight Illinois specialty crops to consumers and facilitate buyer connections. The goal of this project is to grow the food safety risk assessment skills of Illinois specialty crop farmers so they can access new wholesale markets, increase sales and create new purchaser and supplier relationships.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The food safety research group at Southern Illinois University will identify safe handling practices for salad greens, cherry tomatoes and melons, and scientifically develop produce washing and handling practices to improve microbial safety and shelf-life. The knowledge obtained from project activities will be disseminated to the specialty crop growers through an on-farm workshop, printed media at farmers markets, and online media at SIU and various social media of growers.
- The Illinois Grape Growers and Vintners Association (IGGVA) will establish, implement, and promote a certification program focused on a specific wine style to educate Illinois' grape growers and winemakers on quality-driven handling and production practices while also narrowing, thus strengthening, the marketing message to consumers. This program, which will focus on Illinois-grown and -produced rosé, will improve grape and wine quality by creating educational sessions and materials for the Illinois grape and wine industry, along with peer-review sessions of wines to evaluate acceptability. Research projects will be conducted to evaluate cultivar acceptability and the impact of harvest timing on rosé wine quality. A marketing campaign will then be designed to connect IGGVA designated rosé wines with consumers; and with Illinois celebrating its bicentennial anniversary in 2018, the IGGVA determined that we would feature this wine as "Illinois Bicentennial Wine" for 2018.
- The Southern Illinois University Carbondale seeks to investigate the effect of emerging pre and postharvest treatments in strawberry whole fruit proteome to identify biomarkers for assessing safety, quality and shelf-life. The pre-harvest treatments will include bioinoculant *Pseudomonas putida* strain S4, and deep ocean minerals, whereas postharvest treatments will include limonene based edible coating, cold storage temperature, and oxygen absorbers. The study also aims to investigate the proteomic response in gray mold infected strawberries, which is one of the destructive disease causing serious losses. In each strawberry season from the project period, the study will be able to identify the proteins expressed differentially as a response to the above-mentioned treatments, which can be valuable information for assessing safety, biomarker identification, and crop improvement. The results will be disseminated to stakeholders through small fruits conference, fact sheets and growers workshop.

- Microgreens are an emerging class of specialty fresh produce, which are gaining popularity due to their pretty colors, intense flavors, delicate textures, and relatively high nutritional contents. In Illinois, there is increasing number of specialty crop growers that have shown strong interest in or have started producing this high-profitmargin produce. With the increasing popularity and consumption of microgreens, concerns over their microbial food safety are occurring. Seed sprouts have been implicated as vehicles of transmission in at least 55 foodborne outbreaks across the world, with illnesses touching from as few as one person to as many as thousands of people. While no outbreak has been documented as carried by microgreens so far, they are at risk for potential contamination, as shown by a few recent studies and by the lack of data pertaining to their microbial safety. There is an urgent need to develop strategies to reduce the risk of microbial contamination in microgreens. The overall goal of this study is to develop new strategies for precisely that. The specific objectives are to: 1) develop a new ultrasound and hot water combined sanitation treatment to clean seeds; 2) develop a new antimicrobial spray with calcium oxide solution to control the microbial growth during microgreen sprouting; and 3) disseminate the findings to microgreen growers and the public. The proposed work directly addresses Outcome 6: Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety.
- The Fermentation Science Institute at Southern Illinois University is proposing research focused on best practices and management strategies for growing hops in Illinois and will share the findings during an educational conference to new farmers, viticulturists, and craft brewers for the potential of starting a hops market to support the craft brewing industry in Illinois. The main purpose of this proposal is to analyze research on best practices for managing hops production in Illinois, to include: on-farm start-up and growing practices, food safety and supply chain management, production costs, and sustainability options. Findings from the research will be communicated to stakeholders (new farmers, viticulturists, and craft brewers) at an educational conference at the Fermentation Science Institute at Southern Illinois University. By analyzing best practices and management strategies for growing hops in Southern and Mid-West states, in addition to the Pacific Northwest, and sharing knowledge with new farmers and craft breweries, we can potentially increase supply and demand for locally grown hops, and promote economic development and tourism in the southern Illinois region and the entire state.

Indiana State Department of Agriculture

Amount Awarded:	\$409,813.81	Number of Projects:	7
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- Indiana Grown will provide information about the nutritional value of Specialty Crops in the form of Public Service Announcements in conjunction with the state's network of Public Television stations. Indiana Grown will also provide assistance to Specialty Crop farmers who plan to attend the Produce Marketing Show in 2018. This show is a valuable sales opportunity for many farmers in Indiana.
- Researchers at Indiana University Bloomington will partner with the Indiana Christmas Tree Growers Association to increase the sales of Indiana grown Christmas trees and address the increasingly competitive marketplace and declining market share from growth of the artificial Christmas tree industry. We will survey consumers and growers to develop educational materials for both consumers and farmers, and a promotional campaign educating the public about the environmental and economic benefits of buying locally grown Christmas trees.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Purdue University will work in partnership with the Indiana Hop Growers Association (IHGA) and individual Indiana hop growers to respond to the expansion and interest in growing hops in Indiana. An interdisciplinary group of Purdue Educators will: 1) organize a series of on-farm educational field days and an annual Purdue hop workshop to highlight prior ISDA SCBDG grant results focusing on Indiana economic statistics and specific production techniques to existing growers. These educational events will continue to provide opportunities for new and existing hop growers for updated and timely training in advanced production techniques. 2) Increase the visibility of the local hop industry and the amount of locally grown hops used in Indiana brewed beer. We will also focus educational efforts to marketing and networking practices, which will include an Indiana Hop Promotion video, assist IHGA with website development and a promotional flyer. 3) Provide facilitated support to the IHGA to build capacity of the organization by helping them refine their mission and vision, train board members, and craft a strategic plan for the organization. 4) Efforts will also be made to collect hop production data regarding varieties, problems facing growers, yield information etc. throughout Indiana via multiple formats. All data will be analyzed and shared with hop producers through Purdue sponsored educational events and Indiana Hop Growers Association meetings.

- Purdue University will evaluate commercially-available and locally-produced growing media made from composted organic waste and conventional media components, and identify the media qualities necessary to produce the best vegetable transplants for use in organic vegetable farming.
Researchers will grow vegetable seedlings in different growing media at research sites in northern, central and southern Indiana, and assess seedling growth and establishment after transplanting. Physical, chemical and microbial characteristics of media will be determined. The need for providing supplemental nutrients during transplant production will be determined. Based on the results, recommendations for producing organic vegetable transplants will be developed, published, and presented at educational events.
As a result of this work, organic vegetable transplants grown in Indiana will be healthier and more efficiently produced. This will increase competitiveness of existing and future operations that grow organic seedlings for sale to gardeners and farmers, or grow organic vegetables to harvest for sale as food. Furthermore, knowledge about which growing media enhance seedling growth through the presence of beneficial microbes can increase competitiveness of all vegetable farms by contributing to development of production systems that are more resilient as a result of harnessing beneficial microbes.
- Purdue University will develop research based and Indiana region-specific information for hydroponic lettuce production in greenhouses and transfer crop production and marketing knowledge to Indiana farmers through effective extension education. Specifically, (i) the proposed research will develop region-specific information by conducting research on the performance of different leaf lettuce varieties for increased productivity, quality and tolerance to temperature stress, measuring the benefits of using supplemental lighting in winter, and developing best nutrient management practices for hydroponic lettuce production in greenhouses and (ii) effectively disseminate and educate beginner and experienced growers using extension methods including workshops, field visits and conferences on best production and marketing strategies for increased year-round profits.
- Purdue University will develop research-based information for profitable indoor or vertical farming and train beginner farmers and entrepreneurs with best practices through effective extension education. Indoor farming involves growing leafy greens in vertically stacked layers in a building or warehouse to produce more food per unit area and make fresh food readily available to consumers in urban areas. As energy cost for artificial lighting is a major operational cost and making observations on plants in different vertical layers that are above eye level can be challenging, the proposed research will develop best lighting sources and camera based monitoring of crop growth and nutritional requirements for increased productivity in indoor farming. In addition, the project will educate beginner farmers and entrepreneurs with best practices for profitable indoor farming using extension methods including workshops, field visits and conferences.

Iowa Department of Agriculture and Land Stewardship

Amount Awarded:	\$282,100.26	Number of Projects:	12
<ul style="list-style-type: none">• Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.• Many of the most recently arrived refugee groups in Iowa have spent the majority of their lives farming and have expressed a strong desire to farm in Iowa as well. Since 2011 Lutheran Services in Iowa has been working with members of the various groups to create the Global Greens program which provides opportunities for growers to be reconnected to the land. Through the project “Increasing Refugee Specialty Crop Producer Training Focused on Food Safety, Organic Production and Crop Planning LSI will provide classroom, in-field and experiential trainings for farmers to improve their skills and knowledge in the areas of food safety, organic production methods, crop planning and farmer transitions.• Golden Hills Resource Conservation and Development (RC&D), working with New Tree School, local growers, and other partners, will create new markets for sales of locally-sourced and locally-propagated native oak trees. The project coordinator will first identify public and private lands with old-growth oak trees from which to harvest acorns. Project partners such as farmers and landowners with an interest in propagating oaks will be identified and trained in proper growing practices. Markets, including public and private customers, will also be identified for sales of propagated trees. Oak seedlings will then be sold to the identified markets, with a portion of the profits being reinvested into the program.			

- Iowa Valley Global Food Project (IVGFP) is committed to creating an agricultural model where local residents and “New Iowans” (families that have recently immigrated to Iowa) can work hand-in-hand to grow specialty crops, communicate and exchange ways to improve local food quality, support families that lack access to food, provide training and working opportunities, and host community events that focus on agricultural education and cross-cultural exchange.
Through this groundbreaking intercultural nonprofit collaboration, members from all corners of the Johnson County will have the opportunity to access community garden plots, gain new gardening skills, and grow food for themselves, their families, and their communities that they deem desired and culturally significant.
Beginning 2018, IVGFP will issue 20 immigrant families a garden plot for the 2018 season (garden plot recipients will be selected through a lottery system which will be open to the public). Gardeners will have access to shared tools, irrigation, and harvest equipment and the opportunity to purchase seeds and plants in bulk/more affordable quantities with other gardeners. In 2019, IVGFP will increase the number of available farm plots to 40 families. In conjunction with the community garden program, IVGFP Farm Manager, Mamoun Elther will be working with community gardeners and volunteers to establish and tend commodity test plots at the farm for larger-scale culturally demanded specialty crops such as sesame, sorghum, corn for making flour, and garbanzo bean.
- Iowa State University will improve productivity and expand production of specialty leafy greens including Swiss chard, bok choy, arugula, and kale, in hydroponic systems in protected cultivation by developing species-specific requirements for fertilizing during seedling production and nutrient solution for production in hydroponic system through scientifically based quantification of mineral nutrient requirements. Results will be distributed through grower meetings as well as industry and Extension publications.
- Iowa State University will conduct research on evaluating season extension strategies for production of spring vegetable crops. The research will study different row cover materials that can be utilized: 1) to extend growing season and 2) as a sustainable pest management tool. Broccoli will be used as a test crop and data will be collected on several crop growth parameters and environmental factors such as temperature, relative humidity, etc. The research will be conducted at the Horticulture Research Station, Ames, IA and research findings will be highlighted through field days, workshops, and research tours. Research results will also be presented at Iowa Fruit and Vegetable Growers Association (IFVGA) and Practical Farmers of Iowa (PFI) annual conferences. Working with Amish and Mennonite growers in Kalona, IA, an on-farm trial will be setup to demonstrate season extension and pest exclusion potential of new row cover material.
- Iowa fruit and vegetable growers are facing pressure to comply with food safety standards, known as Good Agricultural Practices (GAPs), and wholesale buyers are increasingly requiring a third-party GAPs certification. Allamakee New Beginning, doing business as the Iowa Food Hub, will manage funding for a state-wide GAP/GHP Cost-Share Program to defray the cost of these voluntary audits for any Iowa specialty crop farmer.
- Greens-to-Go is a mobile produce stand organized by University of Northern Iowa’s Local Food Program. Teams of youth go to local farms on a weekly basis (June-Oct) and harvest a wide variety of fruits and vegetables with their own labor, purchase them at very reasonable prices, and then resell at no profit through Greens-to-Go in several low-income neighborhoods in Waterloo, Iowa not served by farmers markets or grocers.
This grant will allow Greens-to-Go and partners (Northeast Iowa Food Bank, Jesse Cosby Center, several churches, several local farms, UNI students and neighborhood youth, and AmeriCorps members) to operate in more neighborhoods, reach more families, increase the volume of local products sold at these neighborhood stands, and assist recent refugees in developing marketing skills to sell their vegetables at local markets.
As a result, many more families will have access to freshest locally-grown fruits and vegetables at affordable prices, while local vegetable farms will see an increase in sales due to new markets created for their products.
- Since 1985, Practical Farmers of Iowa and our members have specialized in farmer-to-farmer knowledge sharing. Many specialty crop farmers in Practical Farmers’ membership are asking for training on machinery and equipment for specialty crop production, and see this knowledge gap as a barrier to scaling up their production. The central objective of this grant is to improve the competitiveness of specialty crops in Iowa through farmer-to-farmer education and farmer networks. Formal outcomes include: (1) 125 specialty crop farmers will attend workshops on tools, machinery, and implement use; including modification, safety, and workflow integration. (2) Enhance the support network and community for 125 specialty crop producers in the state through five farmer-led events. (3) 80% of attendees who attend trainings will report an increase in knowledge. (4) 70% of attendees will report intentions to make changes to their production practices as a result of attending the workshops. (5) 90% of attendees will report that they plan to share what they learned with other farmers. (6) Through media about these events, increase awareness about perennial crop production in the state (target 75,000 people). These outcomes will be achieved through farmer- and practitioner-led events including: field days, intensive hands-on workshops, and associated media and handouts.

- Iowa State University Extension and Outreach Local Foods Program Team will increase local food procurement by 10% in 10 school districts, of various sizes, through sharing stories of readiness from schools successfully purchasing specialty crops and providing incentives for schools new to local food procurement.
- Farmers' markets in the Southern Iowa RC&D region are struggling to recruit millennials to their farmers' markets. To specifically engage this social media-dependent demographic who spend 25 hours per week on their smart phones, this project will use text message marketing and Facebook advertising, to exclusively promote specialty crop farmers' market vendors at area farmers' markets, in addition to radio and newspaper ads. Millennials don't just want to "buy," they want "experiences" to make buying more enjoyable. Because rural farmers' markets are simplistic in nature, food coordinator will collaborate with three farmers' market managers in three different counties to organize millennial friendly markets, making them a "destination" or an "event" that includes specialty crop demonstrations and a kids' activity area to teach kids about fruits and vegetables. One such activity will include a smoothie bicycle where kids can peddle a bike to blend a smoothie made with fruits and vegetables. Kids' activities will not only make the shopping experience more enjoyable, but millennial families will be more inclined to shop at their farmers' market for produce. Also, included in this demographic are SNAP EBT and WIC recipients who are eligible to redeem vouchers at farmers' FOR EXAMPLE: The ABC University will mitigate the spread of citrus greening (Huanglongbing) by developing scientifically-based practical measures to implement in a quarantine area and disseminating results to stakeholders through grower meetings and field days. 107 markets for fruits and vegetables. The WIC director (who serves the same three counties where these farmers' markets are located) regularly attends food coordinator's food council meetings to collaborate on ideas to increase WIC farmers' market voucher usage in this region. Currently, southwest Iowa has one of the LOWEST redemption rates for WIC farmers' market vouchers in the state. Only 27% of these WIC vouchers were redeemed in six southwest Iowa counties. In part, vouchers aren't redeemed because many recipients don't know how to cook and prepare fresh fruits and vegetables. Culinary trained food coordinator will collaborate with WIC director and Parents as Teachers educators to teach six cooking classes and design specialty crop educational material to pass out at WIC Clinics and Parents as Teachers home visits to encourage low-income families to shop for specialty-crops at their local farmers' market. They will also be asked if they would like to sign up for farmers' market text message reminders. Coordinator will also conduct six food demonstrations at the three farmers' markets included in this grant. Specialty-crop cooking classes/demos couldn't be more timely as a growing number of people self-identify as "flexitarians"-those who consciously choose to minimize meat consumption for health, economic, environmental and other reasons. Veggiecentric meals are also growing in popularity as people explore cuisines from other cultures. The gluten-free diet, which includes eating more produce, is also at an all-time high among people struggling with health issues and food allergies. By rethinking farmers' markets from a millennial's perspective, consumption and sales of specialty crops will increase for this demographic.
- The Native Fruit Association will partner with Iowa State University Extension and Outreach, Levi's Indigenous Fruit Enterprises ("LIFE"), and Red Fern Farm, to develop a website with a series of professionally produced videos to promote the cultivation and consumption of three native Iowa Fruits: American persimmon *Diospyros virginiana*, pawpaw *Asimina triloba*, and Aronia berry *Aronia melanocarpa*. The project will feature IDALS sponsor fruit variety trials at Chinkapin Bluffs in Louisa County, Iowa and MAAR Park near Washington, Iowa. For each of the three fruits, three videos will be developed. One will be a short, two to four minute video to introduce consumers to the fruit and to get them excited about trying it. A second, 10-15 minute video will show consumers how to harvest, handle, and prepare the fruit into delicious juices, sauces, jams, pies, smoothies, and ice cream. The third video, also 10-15 minutes, will be aimed at potential growers, showing planting and cultivation techniques, site selection, production cost estimates, and production profit projections. Each video will be linked to more detailed written information on the website, including several recipes for each fruit, lists of producers and their contact information, and step-by-step instructions for planting and cultivation for each fruit crop.

Kansas Department of Agriculture

Amount Awarded:

\$296,405.62

Number of Projects:

6

- The Greater Northwest Kansas Community Foundation (GNWKCF) will partner with the High Plains Food Co-op (HPFC) and Advancing Rural Prosperity, Inc. (ARPI) to assist Northwest Kansas growth producers expand vegetable production in and prepare to deliver to institutional markets. The outcomes this project strives to achieve are as follows:
 - Increase supply of specialty crops from Northwest Kansas agricultural producers.
 - Prepare producers for production and delivery requirements for institutional markets.
 - Increase access and awareness to potential institution market customers within the HPFC distribution system.
 - Improving the local economy as a result of specialty crop development.

This project is designed to help address the food supply, access and security needs related to vegetable supply and consumption in the High Plains food shed that includes Northwest Kansas. This will be accomplished by increasing vegetable production through supporting expansion of growth-oriented HPFC producers. High-volume producers will be identified, provided expansion planning and implementation assistance. New producers will be recruited and infrastructure expansion and financing packages will be evaluated for integration of the higher volume production into HPFC marketing channels. It is critical to have the right producers well-prepared to meet future institutional market needs to reach both more diverse and higher number of consumers. Sufficient planning, production and aggregation capacity, food safety training and procedures, handling, food packaging and storage will need to be considered in preparing producers for this market.
- Through the Linking Experienced and Beginning Kansas Specialty Crop Farmers to Share Information for Establishing Successful Specialty Crop Enterprises Project, the Kansas Rural Center (KRC) will link experienced and aspiring specialty crop farmers to provide information and networking opportunities that lower production costs, increase profitability, and help to increase specialty crop enterprises in Kansas.

High participation in KRC and other organizational workshops indicates strong interest in starting specialty crop farms or adding an enterprise to an existing farm. Currently acres in specialty crops in Kansas are low. Consumer interest in local fruits and vegetables presents a growing market opportunity, but information and access to the information needed to start or manage such enterprises is limited. At recent meetings growers emphasized the need for sharing success stories and information from farmer to farmer.

Through five regional workshops on conservation, production, and marketing practices, panels of experienced growers and experts will provide information to help beginning farmers determine costs and benefits, production needs, and marketing strategies, plus provide access to experienced growers for continued information and advice. Five experienced growers and five beginning growers will be linked in a learning circle to share information and identify needs, and provide case study success stories for publication statewide, and establish an ongoing network for information sharing.

Participants will be surveyed at the workshops and at the end of the project to determine the number of new growers or planned operations and new practices, links maintained to experienced growers, and seasonal marketing success.
- Through the Farmers' Market Consumer Recruitment Campaign, the Kansas Department of Agriculture will provide market managers and vendors with the resources they need to increase awareness of specialty crops available at their market through promotional events, marketing templates and guidelines, educational workshops, and give away materials.
- The Kansas 4-H Foundation will establish a living classroom at Rock Springs 4-H Center that provides hands-on learning opportunities for youth and educators to learn about Kansas specialty crops. The exploration of the processes involved in the production of raspberries, blackberries and honey will provide engaging programs that educate the current and future consumer, while orienting potential producers. Featuring these crops (as available) in the menus of visiting groups provides the comprehensive education supporting the farm-to-fork concept.

This unique project will lend itself to educational experiences for audiences of all ages, targeting the more than 20,000 guests (primarily 4-H youth, school-aged youth and Extension and classroom educators) on grounds between March and October. The initial year will include readying the land (4,000+ sq. feet), establishment of crops, development of educational programs, and generation of promotional materials for the kitchens.

The production and consumption of selected specialty Kansas crops will immerse guests in the growing, harvesting and maintenance processes. The educational programming associated with the crops and the care of the project will be designed to optimize the natural setting, focusing on processes and supporting the possibility of classroom or community replication. Complementing the organization's inherent focus on outdoor education, this newly established program supports the associated aspects of conservation and environmental impact. Food safety and the exploration of potential impacts from outside sources will be incorporated as important learning opportunities, providing consumable items and facilitating discussions throughout the year.

- Kansas State Research and Extension (KSRE) will collaborate with KS growers towards the implementation of enhanced field packing containers that will control postharvest disease, and increase shelf life of small fruit crops common to Kansas. Specifically, the project proposes the use of cardboard flats coated with a cellulose antimicrobial film during field packing operations in combination with storage at refrigerated conditions. This technology will improve shelf life, appearance of fresh fruit and potentially reduce production cost, making produce more accessible, affordable and attractive to consumers. We will carry out the project in two parts.
In the first part of the study, cardboard flats with antimicrobial properties will be developed, and their effectiveness at different storage temperatures will be evaluated and optimized in a laboratory setting.
During the second part, we will work together with stakeholders. A pilot study will be conducted to implement the use of the in lab optimized packing technology. The team will measure shelf life, and related quality attributes, of the packed fruit in the enhanced containers. These results will be compared to the same measures of fruits harvested by traditional methods in order to determine the benefit of the proposed technology. The team will disseminate research findings using social media, local media outlets, meetings with grower groups, such as the annual Great Plains Growers Conference & Trade show, and local market outlets (e.g. farmer markets). The team will also collect data through a survey regarding current packing practices and perception of postharvest loss risk among small fruit crops growers. The aim of this outreach will be to enhance the competitiveness of specialty crops in Kansas through increased accessibility, sustainable practices, production and economic return.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Kentucky Department of Agriculture

Amount Awarded:	\$287,433.90	Number of Projects:	9
<ul style="list-style-type: none">• Extension agents and the vegetable plant pathologist at University of Kentucky will monitor efficacy of downy mildew fungicides for vining crops for in-season dissemination of improved fungicide recommendations for Kentucky vegetable growers.• The University of Kentucky will conduct winemaking experiments using apples and grapes specifically adapted to the climate of Kentucky to define best production methods for quality sparkling wine and cider. In addition to research on wine and cider production methods, plant performance will also be recorded from a newly planted cider-specific apple orchard at the UK Horticulture Research Farm. Results from all experiments will be used by University of Kentucky Extension Specialists to make recommendations to current and future sparkling wine producers of Kentucky through site visits, grower meetings, and field days.• Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.• The University of Kentucky will partner with the Kentucky Department of Agriculture to increase demand for Kentucky specialty crops by linking the expertise of faculty and staff in Dietetics and Human Nutrition with Extension agents, community partners, and producers. The Plate It Up! Kentucky Proud project will specifically develop new recipes appropriate for low-income populations, including those experiencing food insecurity. By providing healthy, tasty, and economical recipes and nutrition education, we anticipate food-insecure consumers will be better equipped to purchase and prepare locally grown fruits, vegetables, nuts, and herbs, thus improving health and supporting local specialty crop producers.			

- This project will meet the highly diverse marketing education needs of scale-variable Kentucky specialty crop farms and businesses by developing new trainings and resources, while extending several existing programs. New materials will include an 11 module beginning farmer-friendly curriculum spanning online and social media marketing, best practices for direct market vendors, self-evaluation, and basic market research skills. We will offer these modules statewide through in-person trainings scheduled by Extension offices, grower groups or other agency partners. This project also supports the continuation of MarketReady core trainings and meet the buyer panels as well as expansion of previously piloted MR webinars on advanced topics. Growers completing the 11-module curriculum above will find MarketReady a logical next step toward expanding their business and accessing new markets for their products. The 13 business functions discussed in the intensive 1-day MR core training serve as a self-evaluative checklist for specialty crop businesses looking to grow. This project is a collaboration between the University of Kentucky Center for Crop Diversification and MarketReady. Since 2000, the CCD has been providing specialty crops production and marketing information to Extension and producer audiences in Kentucky. MarketReady has intensively trained over 600 KY producers since 2011 and has since expanded into 15 states. This project will allow the CCD and MR teams to focus deeply on the needs of beginning and direct market producers in Kentucky while also delivering advanced content relevant to large, established, or growth-minded specialty crop businesses.
- The UK-Research Foundation is the applying institution. This proposal will study ambrosia beetles (AB) in cooperation with nursery growers from Central and Western Kentucky. The project has an out-of-state collaborator (Dr. Ranger USDA-OHIO), and has a multidisciplinary team (horticulture and entomology).
The project will enhance competitiveness of nurseries and fruit trees through the development of sustainable management practices (outcomes 4-5) (i.e.: improve their management during transplanting to reduce stress; and conduct insecticide sprays based on the abundance of flying AB).
AB are pests of ornamental and fruit trees. Adult AB bore into the sapwood and heartwood making galleries, tunnels and a brood chamber. Then they inoculate a symbiotic fungus. This fungus, other organism, or both may cause tree mortality. Documented information on invasive AB attack, and magnitude of damage to nursery or fruit trees is absent in KY. However, growers have reported that AB have been killing trees, and made them non-marketable in different areas of Kentucky. Surveys in W-Kentucky in 2016 detected six invasive AB species. The three most dominant were Granulate ambrosia beetle, Black stem borer, and Camphor shot borer in three western counties. These three species are invaders from Asia. Invasive AB colonize live tree tissues; and they are the most destructive AB in nurseries. They affect trees, bushes and vines in nurseries, peaches, cherry, apples, and landscape plants.
- The SoKY Marketplace in partnership with the Warren County Fiscal Court and Warren County Cooperative Extension Office will increase the sale and consumption of specialty crops in South Central Kentucky by creating promotional videos, offering educational programming, and increasing accessibility of local specialty crops by the developing of a farmer's market storefront. The promotional videos and educational programing will increase sales of specialty crops by expanding the familiarity of specialty crops and their incorporation into healthy meals. The creation of the SoKY Marketplace storefront will extend the number of days and hours that individuals can purchase locally grown produce, thus increasing income for local specialty crop producers.
- The Kentucky Alliance of Boys & Girls Clubs' "Dirt to Dinner: Youth Gardening and Cooking Clubs" project will begin or expand gardening and cooking clubs at two to three Boys & Girls Club locations across Kentucky. This project educates kids and teens about where their food comes from and how to access it, healthy eating habits, and basic cooking skills. Educational field trips reinforce the program lessons through firsthand experiences to explore a variety of local and regional farms and agriculture or food related businesses. Participating youth will develop and publish two specialty crop cooking guides to help build awareness and promote healthy eating habits to other Club youth, their families, and the community at-large.
- The objective of this project is to make specialty crops a lasting dietary staple for new and presently underserved customers. Community Farmers Market (CFM) has been selected as one of four locations for the expansion of the Farmacy Program, developed by the Mountain Comprehensive Health Corporation (MCHC) and the Community Farm Alliance. CFM's inclusion is largely due to the success of existing programs developed to improve access to fruits and vegetables, such as the Double Dollars program and CFM mobile market. The goal of the Farmacy program, to improve access of fresh fruits and vegetables to nutritionally at-risk families, provides opportunity to expand the specialty crop market to new consumers. Building on existing programs, the CFM will use the Farmacy program as a vehicle to continue to expand a presently underserved customer base. This proposal requests funding to support the development of education and outreach activities, such as specialty crop cooking demonstrations and sampling, after school snacks for targeted populations, the development of a specialty crop cookbook, and "Shop with a Dietician". The project will be administered by project contractual positions (as described in the budget section), with support from partners Light of Chance and the Western Kentucky University Dietetics program.

Louisiana Department of Agriculture and Forestry

Amount Awarded:

\$347,022.65

Number of Projects:

6

- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The Louisiana Department of Agriculture and Forestry (LDAF) will partner with schools and community groups to implement the Louisiana Let's Greax a Garden Program (LLGG) supporting youth and adults from 40 school and community groups in increasing awareness of, access to, and consumption of specialty crops (fruits and vegetables). In addition, participants' are expected to gain knowledge of healthy nutrition practices, gardening skills, and food preparation techniques. This will be accomplished by exposing an estimated 800 children and adults to Louisiana specialty crops through supporting the implementation of 40 school and community gardens and the provision of a demonstration garden.
- The Louisiana State University Agricultural Center (LSU AgCenter) and Louisiana Department of Agriculture and Forestry (LDAF), will determine the susceptibility of commercially available satsuma cultivars to citrus canker caused by *Xanthomonas axonopodis* pv. *citri* to mitigate the spread of citrus canker in the state. During 2014-2016, the LSU AgCenter processed 292 citrus plant tissue samples as a part of the citrus cooperative agricultural pest survey conducted by LDAF. These samples consisted of a variety of citrus species, but 27% (79) of 292 tissue samples came from satsuma trees alone. Only a small fraction (2.5%) of the satsuma samples tested positive for citrus canker with real time polymerase chain reaction. This preliminary data indicates that Louisiana satsumas are highly tolerant to citrus canker. The research proposed here will produce field-based scientific data on the susceptibility of commercially available satsuma cultivars to citrus canker which can then be used to promote satsuma varieties that are highly tolerant to this disease. To accomplish the project objectives, we will install healthy satsuma trees of different cultivars in southern Louisiana at five known citrus canker infested locations for two years. Disease incidence and disease severity data will be collected and analyzed to determine the satsuma susceptibility to citrus canker. The results of this research will be shared with citrus growers through grower meetings and other education outreach programs.
This project aligns with the scope of pest and disease control and is directed towards enhancing the competitiveness of Louisiana produce satsuma specialty citrus.
- The LSU Agricultural Center will assist farmers and other specialty crop growers interested in growing tea (*Camellia sinensis*), a new specialty cash crop*, by providing research-based information on tea varieties adapted to Louisiana's soil and climate with superior yield and quality for brewing gourmet loose teas. In addition, specific market demand will be evaluated through consumer surveys at select markets. Information developed from this project will address two critical issues faced by tea farmers: "best varieties for local production" and "market and consumer preferences". To accomplish these goals, a germplasm collection consisting of named varieties and seedling selections will be established at the LSU AgCenter Hammond Research Station during year 1. Plants will be grown following standard production protocol and evaluated for growth vigor and cup quality in years 2 and 3. Consumer surveys will be conducted during year 1 with two target markets, high-end grocery stores and farmers' markets. A tea production workshop will be conducted at multiple locations to provide training for farmers interested in market demand, variety selection, production schedule, and quality assessment. Overall, we expect to generate a research-based foundation of knowledge for a local tea industry in Louisiana.
- The LSU AgCenter will promote educational programs for the adoption of on-farm food safety practices that will assist producers in managing risk and regulatory changes. Targeting small farmers, packers and processors, Good Agricultural Practices (GAPs) and Good Handling Practices (GHPs) programs will be offered around the state. Topics include food safety, water quality, manure management, worker health, sanitation, animal management, handling practices and food safety regulations. Adoption of GAPs and GHPs will help Louisiana Specialty Crop producers increase their economic competitiveness through new market opportunities and regulatory compliance. Financial assistance in the form of a cost reimbursement program will be established and will support 75% (up to \$1000) of the auditing fees associated with GAPs certification. LSU AgCenter 'current on-line multi-lingual food safety factsheet series addressing the risk factors associated with on-farm production of fresh produce and management tactics for minimizing risk will be expanded with new publications. Farm food safety educational training videos will be developed and linked with LSU AgCenter's on-farm food safety decision tree web based application. This novel tool help producers identify food safety hazards and mitigation practices, train their workers, prioritize management tactics and familiarize producers with the principles of GAPs/GHPs.

- The LSU Agricultural Center has designed and built a chilling system featuring an antimicrobial sprayer for reducing pathogenic loads on the surface of fresh produce and the rapid initiation of the cold chain. Produce can be contaminated from pathogenic bacteria in irrigation water and from wildlife. These pathogenic bacteria are harvested with the produce and, particularly for produce consumed raw, transferred to the consumer. The producer is required by regulation (Food Safety and Modernization Act, (FSMA)) to address these food safety concerns. This spray system is intended to be used immediately or shortly after harvesting. The proposed study is to determine/validate the effectiveness of the system in reducing *Listeria* and *Escherichia coli* levels from the surface of cantaloupe. Non-pathogenic bacteria, *L. innocua* B-33016 and *E. coli* ATTC 25922, will be used as surrogates to validate our system. We will spray peroxyacetic acid (PA) antimicrobial agent in an actual farming environment to test the system's effectiveness. PA is water soluble, and is commonly used to wash fruits and vegetables to reduce pathogenic bacteria. The proposed system can spray the chilled antimicrobial agents, wash, and cool the produce in one operation. This should be more efficient from a production standpoint, and is expected to be more effective in reducing pathogen load compared to washing only. Advantages include no contamination of wash water, rapid and early chilling and a potential for reduced cost. Both quality and safety are expected to be enhanced.

Maine Department of Agriculture, Conservation, and Forestry

Amount Awarded:	\$530,367.60	Number of Projects:	9
<ul style="list-style-type: none"> • Maine Department of Agriculture, Forestry and Conservation oversight • AgMatters LLC will establish a contractual agreement with the Maine Department of Agriculture, Conservation & Forestry to provide Maine Specialty Crop growers assistance as they prepare for GAP/GHP (Good Agricultural/Good Handling) or Produce Harmonized audits during the 2017-2018 grant cycle. Success will be measured by grower's evaluations indicating growth in understanding of fecal indicators and pathogens; increased safety knowledge of all inputs into the specialty crop chain; their increased understanding of the roles of humans, plants and animals as vectors of pathogens; and preharvest and postharvest process impacts on microbial and chemical threats to the safety of produce--basic food safety. This grant work time is equivalent to two days per week. The pool of impacted growers has steadily been maintained over the last 4 years as more and more growers prepare for the impact of F.S.M.A.'s Produce Safety Rule by learning more about GAP and GAP audits because they closely resemble the Produce Safety Rule requirements. AgMatters LLC will speak at grower and other meetings to make growers aware of these services. AgMatters LLC will meet with at least 30 growers individually or in small groups, and offer training that makes growers aware of food safety issues, gives them suggestions for adaptation of the model to individual farms, and assists them in their creation of a Food Safety Plan for their farm as they prepare for their audits. AgMatters LLC is always available for follow up needs of farms. • AgMatters LLC will establish a contractual agreement with the Maine Department of Agriculture, Conservation & Forestry to provide Maine Specialty Crop Growers assistance as they prepare for the implementation of FSMA's Produce Safety Rule. This grant work time is equivalent to two days per week for this final year of the grant. The pool of impacted growers will increase in each year as FSMA is enacted. By 2020 it will include all growers with income from produce sales of \$25,000.00 and up. AgMatters LLC will inform growers of the requirements of the Rule and assist a minimum of 25 growers this final year of this grant, as they implement the food safety assurances required by the law. AgMatters LLC will take on the impartial role of tutors/supporters/advisors/advocates to Maine Specialty Crop growers and producers who will be affected by this law. AgMatters LLC will fulfill the outcomes of this grant through presentations, one-on-one meetings, and social media. Success will be measured by grower's evaluations of growth in understanding of fecal indicators and pathogens, growers increased safety knowledge of all inputs into the specialty crop chain and their increased understanding of the roles of humans, plants and animals as vectors of pathogens and preharvest and postharvest process impacts on microbial and chemical threats to the safety of produce. 			

- The Maine Landscape and Nursery Association (MELNA) is applying for a grant to fund a comprehensive, year-round marketing campaign to support Maine's Nursery and Landscape Specialty Crop industry. The campaign will help launch two new initiatives: 1) A state-wide Public Relations awareness program that provides year-round support of MELNA and Maine's horticulture industry across a range of strategic areas and 2) Support of MELNA leadership of, and participation in, a Maine school garden collaborative. These programs will be designed to build upon recent, successful MELNA marketing initiatives to increase consumer interest, awareness, and demand for Maine's specialty crops, which include the Plant Something! Plant Maine! campaign and the brand new 2017 Maine Flower Show. In December 2015, MELNA launched a state-wide campaign, Plant Something! Plant Maine! by joining Plant Something, a grass roots, nationally established multi-media campaign to increase the public's support of local growers, nurseries, garden centers, and landscapers through awareness of the benefits of planting specialty crops for the landscape and garden. In March of 2017, MELNA debuted the first-ever Maine Flower Show to showcase horticulture in an agritourism event that attracted over 16,000 people. This request will enable MELNA to fund a statewide Public Relations campaign, a 2018 Maine Flower Show sponsorship, and the leadership of a Maine school garden collaborative in addition to a Plant Something! Plant Maine! 2018 TV advertising campaign and targeted social media, web content and digital marketing programs.
- In order to expand the market for maple syrup products, the Maine Maple Producers Association desires to establish an agreement with the Maine Department of Agriculture, Conservation and Forestry to execute a professionally designed marketing plan that will promote the growing state maple industry and increase retail sales by at least 10%. This will increase jobs, retail business opportunities and profitability of Maine's maple economy. Professionally designed marketing plan components will establish a "Maine brand" and develop brand awareness in Maine's target maple markets enabling Maine to compete successfully with other maple marketing states and provinces both regionally and nationally. Tools to be developed include a branded display for use at fairs, events and the Big E, an expanded social media promotional strategy used by maple producers to tell the maple story and leverage the Maine brand, a gift guide to promote maple syrup products to the public and to potential co-marketers and food safety trainings for producers to support the quality assurance of their products. This project will take place between 2017 and 2020.
- Soil health and crop diversity have been major foci at trade conferences and agronomy workshops over the past 2 years. As a result, Maine potato producers are actively engaged in learning about and experimenting with alternative, rotational and cover crops. As an increasing number of growers consider these alternative cropping systems, questions frequently arise regarding best management practices for crop production, how to best control pests (weeds, insects, and diseases) of the alternative crops, and the effect the alternative crops (and pests that affect them) have on potatoes. The Maine Potato Board has taken a lead role in researching and promoting alternative crops that can be grown in conjunction with potatoes with the goals of improving economic returns to the grower, providing options for growers to expand current crop rotation lengths, and directly and indirectly improving potato yields. This project will build on the results from the previously funded two year Specialty Crop Block Grant "Improving Maine Potato Yields through Increased Rotation Lengths and Improved Rotation Crop Profitability" in an effort to develop an informational resource for growers interested in diversifying their cropping systems. This project will continue to experiment and evaluate novel cropping systems, marketing options for alternative crops, and quantify the effect these crops have on potato quality and quantity.
- The University of Maine Cooperative Extension will develop soil and climate based phosphorus (P) recommendations, to improve nutrient use efficiency and reduce grower's input cost with environmental issues as well e.g. eutrophication of lakes and rivers due to P pollution. Objectives of this study are to create robust grower specific P recommendations, with multiple sites that will include varied soil textures, soil moisture, and weather conditions. Yield, quality, soil moisture, weather data, P uptake, tissue sampling, and soil physical, chemical, and biological data will be used for this study. A ground-based active optical (GBAO) sensor will be used to monitor plant health, and adjust fertilizer application, which may help in developing yield prediction models. There will be significant outcomes from this study. An online mobile application will be prepared where growers will be able to access required P rates for his field using maximum yield potential, soil type, and closest weather station. It will help in managing P variably, which will benefit in reducing its application rates. Since recommendations will be economical using potato size, and other quality parameters, growers will be able to decide whether additional P application will improve their revenue.
- This partnership with the Maine Agricultural & Forest Experiment Station and University of Maine Cooperative Extension (divisions of the University of Maine System acting through the University of Maine) will address microbial quality and safety of Maine maple syrup. This project will reduce product loss and evaluate risk of potential mycotoxin production due to fungal contamination by defining processing steps needed to inactivate fungal contaminants during production and packaging of syrup. It will also generate previously unavailable data regarding the fate of *Listeria monocytogenes* during syrup production and packaging that will assist producers with preparation of FDA food safety plans.

- The Wild Blueberry Commission of Maine (WBC) is proposing to develop and implement a University of Maine project for Optimizing inputs for wild blueberry weed and disease integrated management (IPM) for Maine's 510 wild blueberry growers with 44,000 acres of commercial production. This request for a 14 month project will total \$99,200 in funding to prevent \$32.5 million in annual grower losses and sustain \$128 million in value added economic activity per year to Maine. Wild Blueberry growers have consistently ranked controlling weeds and diseases as two of their top concerns for sustaining crop production and yield. If funded, this project will continue to: 1) evaluate herbicides and identify the best material and timings that will provide the most cost effective control of weed species, 2) evaluate fungicides and timings to control mummy berry and leaf spots to provide the most cost effective control of these diseases. We will also use weather station network data and applied research to provide growers with disease forecasts for mummy berry and Botrytis blight to reduce crop loss and use the most cost-effective timing for fungicide applications. This program will also educate growers on how to manage diseases and weeds by rotating or combining pesticides to provide the most cost effective controls to prevent yield reductions. Growers will be surveyed at educational sessions to determine understanding and adoption of the disease and weed management strategies evaluated in this program.

Maryland Department of Agriculture

Amount Awarded:	\$407,845.53	Number of Projects:	8
<ul style="list-style-type: none"> • The Maryland Department of Agriculture Food Quality Assurance Program and the University of Maryland will partner to provide training, certification of compliance with food safety practices, food safety technical assistance and cost share funds to assist with implementation of food safety practices to assist specialty crop producers and packers transition from voluntary food safety programs (GAP/GHP) to compliance with the Food Safety Modernization Act Produce Rule. This project will also provide specialty crop growers with a method to assure buyers they are compliant with the standards for growing, harvesting and packing specialty crops in the FSMA Produce Safety Rule. • The Maryland State Horticultural Society, in cooperation industry stakeholders, will develop a social media platform and marketing "toolbox" for small fruit marketers that will increase consumer awareness of (1) locally and regionally produced small fruits and (2) the nutrient and dietary value through promotion/display materials (toolbox) for the retail and farm market segments throughout the season. • This project aims to increase sales and consumer demand for Maryland grown specialty crops through targeted advertising, strategic consumer and wholesale promotions, networking events, and direct partnerships with Maryland specialty crop producer associations. Previous Maryland's Best promotions funded by this grant have increased sales of Maryland specialty crops by millions of dollars. Maryland's Best assets such as the web site www.marylandsbest.net, Maryland's Best brand awareness and preference, producer and buyers contacts, the Maryland Department of Agriculture's Communications Office and established events will be leveraged to insure that the proposed funds will achieve a maximum return on investment. • The project will provide enhanced research, education, marketing and training of small fruits and hops for 320 existing and beginning Maryland farmers. Through this grant, The Southern Maryland Agricultural Development Commission (SMADC) and subcontractors will provide an advanced small fruits and hops workshop series; a beginning small fruits and hops workshop series, two regional tours, research and demonstration trials of 17 varieties of small fruits and hops, and a resource portal library. The trials (totally 348 plantings) will be conducted at the Upper Marlboro Research Center, and specifically tested for Southern Maryland climate, disease pressure, and unique growing conditions. • The University of Maryland will conduct a field experiment to develop and test new tools for managing weeds and insect pests in organic lima (<i>Phaseolus lunatus</i>) and snap bean (<i>P. vulgaris</i>) and other <i>Phaseolus</i> bean production systems. This will involve combining a living mulch with conservation tillage and disseminating research findings to all MD farmers. • Research and Extension faculty at the University of Maryland will plant and train an intensive apple orchard to identify the optimum techniques and rootstocks needed to develop a tall spindle planting for direct market growers. • Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding. • Future Harvest CASA (FHCASA) proposes tapping its core competencies -- field education, farmer engagement, and peer-to-peer knowledge transfer -- to create and implement a sustainable plant health and pest management track for its Field School for new and established farmers. UMD Extension and farmer educators/innovators will advise the project, host educational events, and help FHCASA showcase and train on latest research; other partners will help distribute materials created for the project. 			

Massachusetts Department of Agricultural Resources

Amount Awarded:

\$372,365.97

Number of Projects:

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- Through Growing Good Food CAN (Culinary and Nutrition) Grow Healthy Kids, Massachusetts Agriculture in the Classroom (MAC) will expand its work enhancing the competitiveness of Specialty Crops (SC) in schools by creating a model with the Auburn Public Schools (APS) that expands access to and consumption of SC required in the National School Lunch Program (NSLP).
- Nuestras Races will boost consumption of and access to healthy, locally-grown specialty crops for low-income Latino residents via a Mobile Market, offering produce at affordable prices in locations convenient to the residents, while benefitting farmers with increased sales and market access.
- Massachusetts Department of Agricultural Resources oversight
- As a food hub dedicated to supporting local farms, Lettuce Be Local will increase the safe and secure distribution of locally-grown specialty crops by expanding accessibility and knowledge of local food through education, aggregation, and transportation
- Massachusetts Farm to School will increase the competitiveness of locally grown specialty crops by supporting local specialty crop procurement, promotion, and education at early education and care sites throughout the Commonwealth. Through training and technical assistance we will ensure farmers are able to access this market for retail and wholesale sales, and preschool providers have the knowledge and capacity to source locally grown specialty crops for their students and provide engaging educational activities to support the development of healthy eating habits and a preference for locally grown fruits and vegetables from the earliest age.
- The Northeast Organic Farming Association/Massachusetts Chapter, Inc (NOFA/Mass) will enhance the competitiveness of specialty crops by addressing the need for soil technical assistance among specialty crop growers through the development of a statewide soil technical assistance program.
- Groundwork Lawrence (GWL) seeks to build upon our previous specialty crop project by expanding our efforts, harnessing new resources and opportunities for specialty crop education and sales in Greater Lawrence. GWL will increase the consumption of specialty crops through new staff capacity to plant and harvest specialty crops at Costello Urban Farm which will then be sold at the Groundwork Lawrence farmers markets. In addition, GWL will conduct and oversee expanded youth education programs at Costello Urban Farm, conduct twilight tours to engage local community members at the farm and host family cooking classes focusing on specialty crops in our new learning kitchen. By undertaking these tasks, Groundwork Lawrence will increase the visibility, competitiveness and consumption of specialty crops in Lawrence.
- The mission of the Massachusetts Farm Wineries and Growers Association (MFWGA) is to foster, promote and encourage the vineyard care, wine production, selling and appreciation of Massachusetts wine, hard cider, and mead, and to provide education to Massachusetts producers and the general public. The Massachusetts wine industry is an agricultural success story, generating \$17 million in 2015 ("An Economic Snapshot of the Massachusetts Winery Industry", 2015 Survey conducted by MDAR, Division of Agricultural Markets, in collaboration with MFWGA) with 55 certified farm wineries, up from 22 wineries in 2005, with expected increase of 75% by 2020. To support continued growth, consumer awareness and winery owner education must be increased. The program will focus on the optimization of Massachusetts wine production, and the optimization of the Tasting Room experience, where consumers interact directly with winery owners. The educational components of this project include Seminars for growers and wine producers, including winemaking, production, grape growing, vineyard care, and Seminars on improving the Tasting Room experience to support the growth of this project and the Massachusetts wine industry. Increased farm winery knowledge will entice consumers to "Fall in Love with Massachusetts Wine" and to experience a meaningful connection to local agriculture and community through the tasting and purchase of Massachusetts wines. As a result, the awareness of Massachusetts wine will increase dramatically and will drive future growth.

- Over the past few years, federal and state-level agencies have sought to minimize the risks of food-borne illnesses associated from produce. In 2002, the USDA Agricultural Marketing Services developed the Good Agricultural Practices/Good Handling Practices (GAP/GHP) audit program. In 2011 Harmonized Audit was introduced. Many distributors, supermarkets and cooperatives now require third-party food safety certification from farms before they enter an agreement to purchase their products.

The proposed initiative would provide direct assistance to Massachusetts Specialty Crop Growers by reimbursing the costs associated with the GAP/GHP or Harmonized audits. In order to maintain access to their wholesale and market channels, these growers must be audited every year, which is a costly endeavor for the grower. The audits cost \$92 per audit and a typical audit lasts 9 hours with travel, audit time and data entry. The proposed initiative would lessen the financial burden of the grower and would allow these farms to continue to access those channels.

Additionally, there are still growers in Massachusetts who are not currently enrolled in a third-party certification program, but will be required to if they would like to continue selling to certain supermarkets and distributors. As part of the initiative, we will work to communicate and ensure these growers that they are aware of the education and resources available to them. The cost-share program will allow them to maintain access to various markets and increase the competitiveness of specialty crops in Massachusetts.

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The Massachusetts Department of Agricultural Resources will partner with the UMASS Extension Food Safety Education Program in order to provide educational resources and outreach to growers throughout Massachusetts. UMASS Extension plays a key role in educating specialty crop growers on the importance of food safety and how policy changes will affect them. MDAR's partnership with UMASS Extension will increase the chances of success for this project and will help ensure a lasting impact on specialty crop growers in Massachusetts.

- Massachusetts Department of Agricultural Resources MDAR. This project will increase specialty crops by providing technical assistance resources specific to product development including food safety training for value-added products. The Massachusetts Food Processors Resource Manual is an on-demand tool which includes food safety information, located on MDAR's website. MDAR will work with a planning team of external specialty crop stakeholders to assess the Manual and update and expand as needed, including the integration of new regulations such as FSMA. Based on identified gaps and opportunities, MDAR will contract with a video production company to develop a pilot high quality educational video with an emphasis on food safety in adding value to specialty crops. Planning will begin in October, 2017 with a review of the Manual for updates and additions, and topic selection for a video by winter, 2018. The remainder of 2018 will be spent promoting the updated Manual and in video script development, conducting interviews, filming, reviewing, and editing the educational piece. The planning team will meet regularly throughout the process. Video topics may include: Required health department permitting; FSMA and food processing. How to scale up, Specialty crop value-added products and Massachusetts residential kitchens; The importance of: Industrial ingredients; Water activity and pH in specialty crop product development; Environmental monitoring and interpreting the results; A process authority. The final video will be made available to specialty crop growers and producers in the fall of 2019 through MDAR's webpages, PBS, YouTube, and stakeholder partners, and evaluated in 2020.
- The MFGA (Massachusetts Flower Growers Association) will use the PSMA (Plant Something MA.) campaign to focus on building awareness and plant sales through an outreach program to beginner gardeners and specifically elementary age children. MFGA will exhibit at a minimum of two Public or educator events. We will distribute a specialty crop seed kit along with instructions on use with youth. We will gather contact information as a goal to distribute seed kits to elementary school groups. The goal is to distribute a minimum of 200 seed kits to educators with an estimated outreach to over 5000 children. We expect these activities will increase traffic to our website and social media, such as garden center/plant retailer MFGA locator tool, thus creating more sales in the Floriculture industry of Massachusetts.

- The Regional Environmental Council Inc. will increase access to local foods through farmers markets (including a mobile market) in Worcester, MA and increase produce sales and number of customers by promoting the new Healthy Incentives Program (HIP).

The Massachusetts HIP pilot is a 3 year program beginning April 2017, administered through MA Department of Health and Human Services. HIP matches SNAP (Supplemental Nutrition Assistance Program) purchases of local fruits and vegetables, and REC Farmers Market and Mobile Market are participating retailers for this program. This incentive program will replace the previous incentive REC offered (50% off SNAP purchases, per person, per day, up to \$20). With clear and widespread promotion of the new incentive program, REC is confident we can increase the number of customers who know about and patronize our markets, which will result in an increase in food sales and consumption. Due to the large population of non-English speakers in Worcester, translation/interpretation will be critical to the success of reaching our target audiences. We will pilot a “Resident Champion” program at two Mobile Market sites located at affordable/senior housing complexes, where a selected resident (who can speak both English and a relevant foreign language) will provide site-specific promotion of our markets to fellow residents. Diversification of specialty crop products will further entice additional customers and sales, and adding new stops to our already robust Mobile Market schedule will provide additional access points for low-income residents of Worcester to purchase local foods and make use of the HIP incentive.

- Sustainable Business Network of Massachusetts’ (SBN)’s 2018 Specialty Crop Integration and
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Advancement Program will build on the success of the 2017 Specialty Crop Advancement Program. The 2018 Specialty Crop Integration and Advancement Program aims to overcome barriers to specialty crop integration by improving the viability, sustainability, and profitability of the Massachusetts and New England specialty crop food industry. This year long program features a Specialty Crop Trade Show, a workshop series consisting of 4 workshops, two 1:1 expert consultations, a matchmaking event, 2 online discussion/networking groups and a B2B meeting for New England specialty crop growers and buyers. SBN’s intention is to enhance the competitiveness of Massachusetts and New England specialty crop products by eliminating barriers faced by specialty crop producers, fostering an environment for the economic growth of the specialty crop industry.

- New Entry Sustainable Farming Project’s specialty crop education project aims to work with small and beginning farmers to encourage crop specialization and to scale production quantities of specialty crops for wholesale markets that require higher volumes, consistency, and food safety compliance. We will research and focus on up to five unique specialty crops in demand by local farm-to-institution and wholesale buyers to develop a comprehensive crop production manual for these crops. The manual will contain detailed wholesale market opportunities, crop production information, enterprise budgets, and post-harvest handling and food safety information and distributed to 400+ producers. Bulk purchasing of production inputs and supplies will be explored. Additional training curriculum will teach new producers strategies to address crop management and soil health at higher production volumes, assessing harvest readiness, post-harvest handling and storage, and affordable strategies to improve on-farm food safety practices. In addition to conducting three practical training workshops, New Entry staff will provide individual on-farm coaching and connections to new wholesale markets. As a result, over 20 small-scale and limited resource producers in Massachusetts will change on-farm behavior to specialize and scale production for targeted specialty crops. At least 30% will access a new market and increase the competitiveness of their specialty crops increasing overall farm income by 10% resulting in greater
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economic viability for these new farmers, increased confidence in accessing direct and wholesale markets, and increased local food security for consumers. TA activities will be tracked weekly, seasonally, and an annual survey will demonstrate project outcomes/impact.

- The University of Massachusetts will introduce natural enemies of plant parasitic nematodes to mitigate damage to turfgrass. The fungus *Hirsutella* will be propagated in the laboratory and introduced into the soil. The bacterium *Pasteuria* (which is not culturable) will be introduced via soil that contains a high population of resting spores. Application of the biocontrol agents will be done during the spring aerification process to insure incorporation into the root zone. Plant parasitic nematode population dynamics and health will be monitored during the subsequent growing season, and potentially for several additional years. In addition, golf greens where *Pasteuria* is already established, and for which previous history of disease incidence and history are known, will be monitored for population dynamics and disease progress.
- The Cape Cod Cranberry Growers’ Association will increase awareness and consumption of Massachusetts Cranberries through a series of strategic components that will leverage the value of this native fruit while quantifying the value of this region’s heirloom cranberry varieties.

Michigan Department of Agriculture and Rural Development

Amount Awarded:

\$1,805,339.89

Number of Projects:

19

- Michigan Department of Agriculture and Rural Development oversight
- The project will work to promote Michigan specialty crop products to both domestic and international buyers in partnership with the following commodity groups: cherry, dry bean, apple and potatoes. The project will allow Michigan specialty crop companies and commodity groups the ability to exhibit at major domestic and international trade shows with the goal of finding new markets and buyers for Michigan specialty crops.

The Michigan Department of Agriculture & Rural Development's (MDARD) International Marketing Program will continue to work collaboratively with the Cherry Marketing Institute, Michigan Bean Commission, Michigan Apple Committee, and the Michigan Potato Industry Commission to promote specialty crop products both domestically and internationally. Continued sales growth and exports are a vital component for the overall success of Michigan specialty crop industry. As production levels increase, the need for new markets grows. Connecting commodity groups and companies that manufacture specialty crops with potential buyers is critical for the expansion of sales both domestically and internationally.
- Oceana Foods, a division of Cherry Central (Traverse City), recently expanded its Shelby Township, MI facilities to accommodate the processing of up to ten million pounds of dried fruit. On average Oceana was processing five million pounds of fruit (cranberries, cherries, blueberries, pomegranate arils, and black currants which are all specialty crops). The facility expansion also allowed for technological updates to the processing equipment which accommodates double the production capacity and, allows for innovation in processing with namely--cranberries.

This equipment provides a new process called impaling that when used to puncture cranberries for processing allows the cranberry to remain whole instead of sliced as with traditional drying methods. The resulting whole dried cranberry more closely resembles a fresh cranberry and the texture of the resulting fruit is more favorable.

This product is not yet widely available on the market. Cherry Central will strive to introduce this innovative new product to their current customers with intentions of reaching new revenues of nearly \$3.2M of whole dried cranberries in the US alone (\$40M total). Additionally, Cherry Central will work to export its new whole dried cranberry to China to achieve nearly \$1.5M in new product sales over the course of the grant period of Nov. 1, 2017-Sept. 30, 2019

Through development and delivery of a new promotional marketing campaign and participation at specific tradeshow in the US and, with two sales-focused trips to China, Cherry Central will also strive to fulfill the production capabilities of Oceana Foods new production facility.
- The use of online blogs and social media channels has risen dramatically over the past several years. Seventy-four percent of consumers rely on social media to guide purchase decisions, and 71 percent report they are more likely to make a purchase based on a social media referral¹. Further, 67 percent of online shoppers say that social media reviews influence their online shopping behaviors². Additionally, recent market research found consumers between the ages of 18-34 ranked blogs as the most important source of information to inform purchase decisions³. Among consumers between the ages of 35-54, blogs ranked as the second most important source behind friends, family, and colleagues. Now more than ever, it is imperative for the tart cherry industry to have a credible online presence to help encourage Americans to choose U.S. grown Montmorency tart cherries.

To help raise awareness of the Montmorency tart cherry and distinguish it from the competition, Cherry Marketing Institute (CMI) is aiming to partner with credible food and health and wellness bloggers. These bloggers have thousands of visitors to their websites daily looking for recipe ideas and inspiration on cooking, baking, snacking and fitness. CMI seeks to partner with these bloggers to create delicious, visually appealing recipes to capture interest from their followers and inspire people to choose Montmorency tart cherries. Further, the recipes, images, and videos associated with these partnerships will be shared with the industry for further use and exponential impact. Bloggers will create recipe videos, quick tips for using Montmorency tart cherries, and informational blog content to share Montmorency tart cherries' scientifically-supported health benefits, unique flavor, their homegrown appeal and their year-round availability in dried, frozen and juice forms.

These partnerships will help CMI shift perceptions of Montmorency tart cherries by raising awareness (knowing what Montmorency tart cherries are) to meaning (understanding their value) and eventually to preference for this specialty crop (choosing Montmorency tart cherries over imported varieties).

Educating consumers of the unique benefits associated with U.S. grown Montmorency tart cherries directly benefits Michigan specialty crop growers and processors, who help contribute 75-80 percent of the U.S. supply of Montmorency tart cherries each year. The content will be used on the CMI website and social channels and shared with industry members for use on their digital properties as well.

- Crosshatch Center for Art and Ecology will enhance the competitiveness of Michigan's small and medium-sized farms, as well as beginning specialty crop producers, through educational and food safety training at the Northern Michigan Small Farm Conference and Pre-Conference Farm School intensives in 2018 and 2019. Based on years of programming for this audience, as well as feedback from three years of post-conference evaluations and other workshop follow-up surveys, we have chosen these three specialty crop sessions to focus on: 1) lean farming, 2) ecological agriculture, and 3) food safety. Lean farming will be offered at the 2018 Farm School and the food safety track will be offered at the 2019 Farm School. Ecological agriculture will be offered in both 2018 and 2019. These educational programs will include national and regional experts, who will also present at breakout sessions at the NMSFC.

Outcomes include: Enhancing the competitiveness of specialty crops through greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources, enhancing the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems, and finally enhancing the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety.
- Eastern Market Corporation (EMC) a 501c3 non-profit, collaborates with community partners to strengthen the EM District as one of the most inclusive, resilient, and robust regional food hubs in the United States. EMC's goal is to fortify the food sector as a pillar of regional economic growth, and to improve access to healthy food choices in Detroit and Southeast Michigan.

Grow Eastern Market (GEM) was launched in 2016 to increase access of local produce by brokering farm-to-fork relationships between new and emerging growers, distributors and buyers to expand wholesale market channels in SE Michigan for specialty crop growers.

Based on lessons learned from its 2016 pilot season, GEM recognized lack of readiness among its specialty crop growers to effectively sell in the wholesale sector. Therefore, it has established its 2017-2019 season goal of creating a formalized training to strengthen the next generation of Michigan wholesale specialty crop growers.

The outcomes for the GEM Specialty Crop Wholesale Farmer Acceleration Training Program include increasing:

 - Wholesale growers to the next tier distribution supply chains
 - Farm income through diversified market channels.
 - Number of wholesale buyers to the Eastern Market Wholesale Night Market.
 - Access to broader variety of specialty crops and growing practices to wholesale buyers.

GEM will achieve the goal of increasing knowledge and experience in selling wholesale among its specialty crop growers through the development and execution of the Program in conjunction with brokerage sales to restaurants, institutions, and grocery retailers within a 25-mile radius of Eastern Market.
- Hop is a perennial specialty crop grown used in beer production. Michigan (MI) is the largest hop producer outside the Pacific northwest; harvested acreage doubled from 2015 to ~800 acres in 2016 and is valued at \$16.4 million. Hop yards are established at a cost of ~\$14K per acre. Hop downy mildew (HDM) is the most important disease; infection reduces cone quality and alpha-acid content. HDM limits MI production as all plant parts become infected; crown rot can cause 100% yield loss. HDM migrates via air currents and may develop resistance to fungicides. Molecular tools can provide insight into the MI population, and development of effective diagnostic tools and durable control strategies. MI growers source plantlets from greenhouse propagators or use field grown rhizomes. Currently, there is not a HDM test for plantlets or rhizomes leaving growers vulnerable; establishing hop yards is a significant investment and healthy hop plants is critical. We seek to advance MI-specific disease management strategies by developing HDM diagnostics for plantlets and rhizomes used to establish hop yards; access to disease-free plants is needed. To develop sensitive and accurate plantlet and rhizome diagnostics we will survey MI hop yards and collect HDM samples to characterize the genetic diversity. We propose to improve HDM management in MI by the following: 1) Develop HDM diagnostics for greenhouse propagated plant material (plantlets) and field propagated rhizomes; 2) Characterize MI's HDM population to develop the foundation for diagnostics; and 3) Provide grower education and outreach for implementation of the developed diagnostics.

- Following its strategic marketing plan, Michigan Apple Committee (MAC) continues to develop and maintain consumer markets using social media and advertising, along its three strategic marketing priorities: 1) Leveraging the “locally-grown” movement and key target markets; 2) focusing consumer promotions on premium varieties; 3) promoting apples for health and nutrition benefits. MAC aims to enhance the competitiveness of the Michigan Apple industry through consumer education programs including social media campaigns and advertising efforts. MAC proposes to spend \$100,000 on a campaign using social media and advertising work that will build online engagement with consumers to drive a deeper connection and awareness that will translate to increased apple movement in the retail marketplace. Tasks to be completed toward this outcome include creating and implementing a social media campaign to educate consumers about the flavor, freshness and availability of Michigan Apples. The social media tactics will take place on Facebook, Twitter, Instagram and Pinterest. In addition, some of the social media posts will be “boosted” or supported by advertising. Particularly in the case of Facebook and Instagram, posts can be boosted and targeted to specific audiences and geographic areas. In addition to online advertising, print advertising will also support this effort.
- The Michigan Asparagus Advisory Board (MAAB), in cooperation with Michigan State University (MSU), is seeking funding to support the long-term economic and environmental sustainability of asparagus production in Michigan. MAAB will contract with MSU to perform the objectives listed below. This project has three central objectives: 1) identify and characterize the *Fusarium* spp. associated with Fusarium crown and root rots; 2) manage habitats to facilitate biological control of asparagus miner; 3) characterize the effects of groundcover management and temperature on asparagus dormancy release and spear emergence and 4) promote adoption of new approaches through outreach activities. To achieve these objectives, replicated experiments and targeted sampling will be conducted on commercial farms and research stations over two years. Results will be communicated to the grower community through extension publications (online and print), presentations at grower meetings, and one-on-one dialogue with growers and extension agents. Key outcomes will include increased asparagus yield, quality, and farmer profitability; reduced pesticide use; and reduced environmental impacts—resulting from improved integrated insect, disease and groundcover management strategies.
- The Michigan Bean Commission will oversee this multifaceted project designed to assess nitrogen application (rates and time) and the use of cover crops and plant residues with the interactions of white mold (*Sclerotinia*) and Root Rot (*Fusarium/Rhizoctonia/Pythium*) diseases to mitigate yield reductions in dry beans. Michigan State University researchers will conduct studies with following objectives and outcomes: Assessment of impact of suitable strategies for dry beans that undergo acute losses from White Mold and Root Rots will be conducted. Sustainable use of nitrogen and cover crops will be fully integrated into this project. Early plant growth that results in high vegetative canopy prior to pod fill will be optimized to reduce total nitrogen applications and minimize conditions conducive to white mold. Increased plant residue associated with cover crops will be used as a strategy to reduce impact of these yield-limiting diseases. The development of tolerant cultivars and breeding lines for white mold and root rot disease conditions within diverse production regions in Michigan will be conducted. Assessment of dry bean disease control strategies aligned with Integrated Pest Management (IPM) standards including varietal tolerance, biological and chemical pesticides will be studied. Recommendations for maximizing of yield through optimization of harvest aid (desiccants) applications will be provided. Dry bean growers will have the ability to dry down green stems prior to harvest. Implementation of grower educational activities to communicate intervention strategies and economic options (current best management practices) used for production of dry beans will be a vital component to the project.
- The Michigan Carrot Committee, in cooperation with Michigan State University, is seeking funding to support the long-term economic and environmental sustainability of carrot production in Michigan. The Michigan processing carrot industry is at a critical juncture because of processor concerns regarding pesticide residues; growers currently rely on fungicides to limit leaf blight. Without replacement products or management strategies to offset a reduction in use of one or more fungicides, valuable processing contracts for carrots may be lost. In addition, monitoring for resistance to key fungicides is important to ensure that those fungicides that are being used maintain their efficacy in the field. Our goal is to develop and implement an advanced disease management system for processing carrot growers that minimizes fungicide use and eliminates pesticide residues on the harvested root. We propose a two-year project to: 1) Evaluate the use of reduced-risk fungicides in a foliar blight management program to protect yields and maintain quality in carrot production, 2) Screen leaf blight pathogens for resistance to key fungicides, and 3) Disseminate research findings and management recommendations to growers for implementation into production systems and decision-making.

- The Michigan Cherry Committee, in collaboration with entomologists and Extension personnel at Michigan State University, will establish a contractual relationship with MDARD to conduct applied research and outreach programming to help cherry growers manage spotted wing *Drosophila* (SWD), a relatively new and important invasive pest. This funding will support on-going research efforts to develop precise monitoring methods to guide timely and efficacious control measures that are economically and environmentally sustainable. This project will also support critical Extension activities that assist Michigan cherry growers to produce SWD-free fruit, such as the statewide monitoring network, an updated SWD management guide, and an industry-wide meeting that will be designed to report directly back to growers, processors, and consultants on project accomplishments and to continue to refine future research priorities.
- Biochars are porous, charcoal-like byproducts from some forms of bioenergy systems, and have been widely promoted as beneficial soil amendments. However, some combinations of biochar type, soil type, and crop can result in negative effects on plant growth. This project proposed by the Michigan Christmas Tree Association, in partnership with Michigan State University, will determine which organisms benefit from biochar, and why: microbes, weeds, or seedlings? This study will use controlled greenhouse and field experiments to measure biochar effects on soil moisture, nutrient availability, and Christmas tree seedling growth and health (i.e., susceptibility to pathogens). We will scale up our results to estimate economic impacts of biochar treatments in terms of irrigation, fertilization and seedling mortality on a per-acre basis. Results from this study will better inform management guidelines for novel amendments that have potential to improve tree growth while avoiding increases in fertilization and irrigation costs, as well as avoiding potential negative impacts of biochar treatments. This information is important for the ability of Michigan's Christmas Tree industry – as well as other agricultural industries – to make fully informed biochar application decisions, given the widespread promotion of biochar treatments. This study address MDARD's Plant Health and Pest Management, and Farm Sustainability funding priorities.
- The Michigan Nursery and Landscape Association (MNLA) will establish effective, environmentally responsible weed control programs for herbaceous perennial nursery stock to increase, by millions, Michigan's market share in this ornamental crop type, increase pollinator habitats and job creation in the state. There are several ways to increase market share; however, this project will employ increasing production efficiency. Production efficiency in other crops have been increased by 70% via the lowering of operating costs (personnel communication, Damian Solomon). In herbaceous perennials one of the major production/operating costs is weed control. Many HP growers still rely upon hand-weeding. The lack of herbicide registrations in HP crops provides growers few options outside of hand-weeding and perpetuates fears of herbicide injury. These labor-intensive control programs, constrain the industry, and render it non-sustainable in today's economy. The objectives of this trial are to evaluate over-the-top use of newer pre-emergence herbicides, following normal label expansion protocols and the registrant company. These newer products will be evaluated as novel winter dormant applications followed by in-season applications in MI HP field and container crops. These consecutive applications will attend to mode of action (MoA) rotations, long-term efficacy and minimal phytotoxicity. Success will be measured as <40% crop injury, >75% reduction in weed biomass and 70% increase in production efficiency (i.e., hand-weeding cost vs herbicide cost). Weed biomasses from the untreated/controls compared to treated areas will be evaluated at the start of each application to measure the relative effectiveness of each treatment period.
- The overarching goal of this project is to improve nutrient and water management, and the control of soil-borne diseases in potato production in Michigan. As an integrated group of researchers at Michigan State University, we propose to test the capability of remote sensing technologies from several different platforms (UAV, airborne and satellites) to detect differences in nutrient status, potato early die disease, nematode infestation and various soil parameters that affect potato growth and yield. Through this research we aim to better identify and understand the conditions that lead to within-field variability of potato fields. In addition, this analysis will be coupled with intensive ground-truth sampling of both soil and plants. Our research will be conducted on approximately 50 to 75 potato fields that represent different soil types, varieties, and management strategies, for a total of 5000 acres. We will carry out intensive ground-truth data collection to correlate remotely obtained plant reflectance with field observations of disease and nutrient deficiencies. This work will be completed on fields selected to represent a larger pool of field conditions. We will also investigate nematode community structure and synthesize existing data on soil properties, diseases, soil health and potato productivity.

- Today world apple production is at an all-time high. Global competition requires that the Michigan apple industry grow and store apples of only the best quality for longer terms (6 to 12 months). Also, new apple varieties are in high demand by consumers. These new apple varieties require intensive evaluation to predict their appropriateness for MI climate. First, to maximize the highest quality, Michigan apples must be harvested at prime maturity and/or matched with an appropriate marketing window. And second, apples have to successfully complete the storage and marketing rigors. Recently, MSU Extension received funding from several sources to purchase the latest automated electronic sensing evaluation technology in a non-destructive and precise manner. MSU Extension Educators and Specialists have several research projects that will use this new technology to gather more robust data to provide needed improvements for the MI apple industry. The primary objective of this project is to more precisely measure apple qualities and storage indices. Data gathered will be used to monitor apple maturity development during the harvest season. Just in time recommendations will be provided to MI apple growers, shippers, packers, processors and storage operators to assist them in making marketing decisions. Numerous apple research and extension trials need to gather quality data. Also, peach and pear trials need analysis. The Michigan Apple Committee will work directly with Phil Schwallier and Amy Irish-Brown, MSU Extension Educators and the MSUE Ridge Apple Quality Lab to execute this project.
- The Michigan Vegetable Council, in cooperation with Michigan State University, is seeking funding to support more informed management of fall cover crops in vegetable cropping systems with the goal of maximizing grower success while limiting risks to the environment. This project addresses the critical need for information on the responses of fall cover crop species to nitrogen (N) fertilization; the capacity of winter-killed and overwintering mustard family cover crops to recycle nutrients to following vegetable crops; and the impacts of winter annual weeds in vegetable cropping systems. Specific objectives include 1) developing N fertilization recommendations for important fall cover crop species considering tradeoffs between biomass production and nutrient losses; 2) investigating the nutrient cycling potential of winter-killed and overwintering fall mustard family cover crops; and 3) evaluating potential impacts provided by winter annual weeds in vegetable cropping systems. To achieve these objectives, replicated research station experiments will be conducted over two years. Results will be communicated to the grower community through extension publications, presentations at grower meetings, and one-on-one dialogue with growers and extension agents. The results of this work cut across vegetable crop commodities, with key outcomes including increased yield, quality, and farmer profitability; reduced herbicide and N fertilizer use; and reduced environmental impacts—resulting from increased knowledge and more informed management of winter annual weeds and species selection and fertility management of fall cover crops.
- Michigan Wine Collaborative is a non-profit organization managed by industry representatives whose mission is to solely enhance the competitiveness, sustainability, and profitability of the Michigan wine grape industry through marketing and promotions resulting in increased awareness and consumption of Michigan wines.
This project will start on November 1, 2017, and will be complete on September 30, 2019. SCB support of \$89,500 requested will be utilized to hire a Project Director/Marketing Coordinator (PM/MC) to manage the day-to-day of the organization, to focus on new member development and, to develop promotional materials to support growing MWC from 70 current members to 200 members over the grant term, and to develop a Michigan wine focused marketing campaign to be used at regional wine events to expose distributors, retailers, wholesalers and consumers to the quality of Michigan's wine industry and the wines produced in Michigan. All efforts will focus on increasing knowledge, access, and consumption, and to assist MWC members in efforts to increase sales, maintain profitability and ensure sustainability. Through MWC's participation in wine events in MI, IL, FL and D.C., the organization intends to inform its members on matters relating to; establishment and sustainability, education and research, promotions and profitability, best practices and funding. Additionally, the MWC will work to recruit and to support the industry and its members; wineries, growers, vendors & suppliers, distributors & retailers, educators & consumers, etc. to ensure MWC becomes an integral part and self-sustaining organization supporting Michigan's Wine Industry.
- Monroe County Community College (MCCC) is seeking \$79,000 to form a partnership with Michigan State University (MSU) and several community organizations to train and engage socially disadvantaged community residents in the farming and consumption of specialty crops. This is the first and only program of this nature in southeast Michigan. Funds will be used to subsidize curriculum development, compensate students, and community workers and trainers. The curriculum will include credit courses that are a part of the partnership with MSU in Agricultural Operations, as well as non-credit and seminar courses to be taught throughout the county. The partners anticipate that within a period of two years, 20 certificates and 20 degrees will be awarded, and over 2000 socially disadvantaged youth and adults will be trained in the farming, marketing, and consumption of specialty crops. The employment of the degree and certificate earners alone will generate over \$1,000,000 in new wages in the first two years. The experiences of program participants will ensure that there are community improvements and a more vibrant economy.

Minnesota Department of Agriculture

Amount Awarded:

\$1,195,011.30

Number of Projects:

15

- To sustainably control weeds in perennial fruit plantings, the University of Minnesota will investigate the use of decomposable grit applied via an air blast sprayer with the long term goal of enhancing economic and environmental sustainability.
- With 1:1 business development and on-farm production and food safety technical assistance, The Good Acre and partners will increase farmer readiness to access wholesale markets and increase farm sales of Minnesota grown specialty crops.
- This project with the Minnesota Grown Promotion Group increases sales of Minnesota specialty crops through statewide marketing including sponsored search advertising (pay-per-click), promoted social media posts, and promotion of specific specialty crops in the printed Minnesota Grown Directory.
- The purpose of the project is to assess the economic impact of growing local cut flowers and to identify their niche markets along the North Shore of Lake Superior. Flower buyers are looking for locally grown products. The North Shore of Lake Superior provides a destination wedding venue for every personality with barns, backyards, local parks, mansions, B & Bs and the rocky shore of Lake Superior. The plethora of resorts, hotels, motels support the destination wedding. Couples are also looking at unique choices for flowers. Seasonal blooms, with a foraged, wild, woodland aesthetic that are locally-grown, continues to top the flower list of style-savvy and eco-conscious couples. While we do a wonderful job of providing great venues and great food for weddings in our area, we are behind in providing locally grown flowers. This is an expanding market not only for weddings but also for current flower buyers. Cook County Extension is collaborating with UMD's Center for Economic Development to highlight the local cut flower industry along the North Shore of Lake Superior.
- The Sustainable Farming Association will increase profitability of farmers and beginning farmers by increasing premium garlic production, training farmers on best garlic growing/marketing practices, expanding markets and supply chains, and researching improved cultivation methods.
- The Regents of the University of Minnesota are applying for a Phase II 2017 Specialty Crops Block Grant to continue to promote the benefits of native grasses with a marketing program at an additional 10 Minnesota garden centers. This Phase II grant further expands on the original 2015 SCB grant, Promoting Native Grasses, by providing native grass benefits education to garden center employees, and more widely publicizing the educational benefits of native grasses with a quick guide for distribution in garden centers, online webinars and a comprehensive guide to grasses in an e-book format.
- This University of Minnesota project will determine berry harvest optimal windows for kiwiberry cultivars/accessions in the Minnesota collection, and how long the harvested fruit can be stored in refrigeration and emerge with high quality that will appeal to consumers.
- The Minnesota Fruit & Vegetable Growers Association will strengthen Minnesota's specialty crop industry using an approach providing tailored on-farm instruction for beginning growers.
- Through the implementation of a variety of marketing strategies, including trade shows, print and digital media, web presence and social media, the Minnesota Certified Seed Potato Growers association seeks to increase industry awareness of the quality and variety of product offerings benefiting the 30 Minnesota member growers.
- This University of Minnesota project will examine the effects of nitrogen fertilization, seed source, and plant competition on the phytochemical production of fireweed in an agronomic setting. Results will provide agronomic recommendations for cultivating fireweed in Minnesota for the production of high-value natural products.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Renewing the Countryside, in partnership with the Minnesota Farmers' Market Association (MFMA) and the Minnesota Institute of Sustainable Agriculture (MISA) will implement this project, building the capacity of market managers to make connections with institutional and wholesale buyers, including restaurants and retailers, which will lead to expanded sales of specialty crops for farmers.
- The Institute for Agriculture & Trade Policy will continue to build on its successful model of creating market opportunities for Minnesota fruit and vegetable producers by building demand and enhancing supply chains between farmers and Head Start programs.
- The University of Minnesota Grape Breeding Project will investigate embryo rescue techniques in order to increase the efficiencies of table grape breeding and accelerate progress in this area.

- In order to extend the season for cool-season crops and marketing opportunities for farmers, the University of Minnesota will use shading in low tunnels and prechilling to improve field production of locally-grown lettuce and cauliflower with flavor acceptable to consumers.

Mississippi Department of Agriculture and Commerce

Amount Awarded:	\$356,333.00	Number of Projects:	12
<ul style="list-style-type: none"> • Mississippi State University will study the application and effectiveness of sensor carrying unmanned aerial systems (UAS) in water management, detection of disease, producer education and overall sustainability in Mississippi Specialty crops. • Farm Families of Mississippi will develop and implement a promotional campaign that educates the public about the benefits of buying and consuming Mississippi-grown blueberries. We will establish a baseline sales figure for the 2017 crop year, produce and air statewide a TV spot and billboard that promotes buying Mississippi blueberries, and then compile sales figures for the 2018 crop year to compare with the baseline sales figure. • Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding. • The Mississippi Department of Agriculture and Commerce will lead the residents of Mississippi on a specialty crop farm tour, featuring some of the state's Agritourism farms, Christmas Tree Farms, Pecan Farms and UPICKS. The outcome of the project will be to educate the public on what specialty crops are, their importance to Mississippi's economy, how they are grown and the faces behind the working farms. The general tasks include educating the participating farmers about the program, distributing the passports within the state through the Mississippi Development Authority, the Mississippi Welcome Centers, the Mississippi Market Bulletin, Visit Mississippi, MDAC social media platforms and vendor booths. • Mississippi State University will increase public access, awareness, and knowledge of ornamental/fruit/vegetable/herb specialty crops through further development and educational/demonstration outreach efforts of Magnolia Botanical Gardens (MBG) at the North Mississippi Research and Extension Center. Informed consumers can make better choices when purchasing specialty crop plants and be more successful in plant production when armed with knowledge of maintenance, use and benefits of these plants. • Mississippi State University will determine the influence of various dump tank sanitizers on the efficacy of post-harvest fungicides on Rhizopus soft rot in sweetpotato. Results will be disseminated to producers via field days and MSU bulletins and/or extension publications. • Virus infections can cause major negative impact on many crops, including grapevines. European grape (<i>Vitis vinifera</i>) and its American rootstocks are prone to infections by more than 70 viruses, including several economically important ones. On the other hand, muscadine (and "southern grapes" in general) remains one of very few cultivated crops with very limited knowledge concerning viruses and their impact on production. However, limited available data (generated exclusively by PI's Lab at Mississippi State University - • The Mississippi State University will provide effective control of problematic weeds in tomato production by developing weed suppressive tomato cultivars. The main goal of this project is to identify tomato varieties having the ability to suppress problematic weeds in tomato production. These tomato varieties will be tested in field to confirm effective suppression of weeds, and at the same time having high quality fruit and increased marketable yield. Results from this project will be made available to approximately 1,200 stakeholders at the Vegetable Field Day, ASHS and SWSS annual meetings, combined. The general tasks of the project will be to select tomato cultivars with the ability to suppress four most problematic weeds in tomato production; and, through further screenings and confirmation tests, select tomato accessions with weed suppressive ability, high yield and quality. The resulting tomato cultivars from this project will be made available to tomato growers across Mississippi through extension agents across the state. • The Pontotoc Ridge-Flatwoods Branch Experiment Station of Mississippi State University will determine the optimum sweetpotato potassium requirement and validate K2O fertilizer application rates that are recommended by soil testing facilities typically used by local growers and consultants. Soil testing research for sweetpotato is very-limited to non-existent in Mississippi and inappropriate application rates could be limiting stakeholder net-profit and affecting our environmental stewardship efforts. Information from this research will be used to adjust soil test recommendations in reports from the Soil Testing Laboratory at Mississippi State University. Research results will also be reported to other labs and the general public in the form of technical bulletins and presentations. 			

- The demand for fresh produce in the marketplace along with the increase in local farmers markets has given Mississippi farmers a foothold, but they lack the scale and capital to compete with regional and global wholesalers. Due to growing food safety concerns, many large buyers in the marketplace such as grocery stores, wholesalers, food service providers, schools, and other institutions require that all growers from whom they make purchases possess Good Agricultural Practices and/or Good Handling Practices (GAP/GHP) credentials. This credential ensures stakeholders in the supply chain that the product they are receiving is of a predetermined quality standard. The cost to obtain and maintain this certification over time can provide a financial burden on farmers and often hinders them from entering some marketplaces. The Mississippi Department of Agriculture and Commerce (MDAC) would like to continue a reimbursement cost-share program with the goal of increasing the number of Mississippi farmers with GAP/GHP certification at 75% percent of certification costs or a maximum of \$500 to allow them to compete in these markets.
- Mississippi consumers are interested in purchasing flowers, particularly if they are grown in our state. Most people do not know how to prolong flower vase life, how to use them to make simple, yet creative designs with easily sourced mechanics (floral foam, wire, etc.) or how to find producers in state. In a 2016 survey, 46 of 47 Mississippi Extension (MSU-ES) Agents showed strong interest in a floral design training program. As a result, the Four Seasons of Floral Design (FSFD) was created. This course is a new, MSU-ES-approved, seven-hour, train-the-trainer program where participants gain basic projects skills suitable for a wide audience. By providing training to participants, demand for locally sourced floral design components may be enhanced.
- Mississippi State University will continue development of detection machinery capable of identifying charcoal rot pathogen (*Macrophomina phaseolina*-Mp) contamination of sweet potato and other agronomic crops. This fungal species is a causal agent of charcoal rot (dry-weather wilt/decay) diseases of about 500 plant species worldwide, including row and horticultural crops important to Mississippi's agricultural industry. Mp is the major cause of significant agricultural economic losses each year in the US, therefore analytical methods that can provide an early warning for the presence of Mp, especially with storage crops is economically important to the state. Mp can cause both external and internal rot in sweet potatoes. In the case of internal rot, which cannot be seen at the producer's level, methods to determine Mp presence in presumed healthy sweet potato roots will enable the grower to ensure a quality product in the market place and maintain consumer confidence.

Missouri Department of Agriculture

Amount Awarded:	\$374,584.77	Number of Projects:	12
<ul style="list-style-type: none"> • Missouri State University will continue to investigate the continued production of several varieties of primocane bearing raspberries in grow bags rotated in and out of a high tunnel with vegetable crops. Information on system logistics and variety performance from this project will allow growers to cost effectively test and possibly add a profitable crop to their high tunnel farming operation. • The University of Missouri Delta Center will develop agronomic practices for <i>Cicer arietinum</i>, called Garbanzo bean or chick pea. <i>C. arietinum</i> is an edible, pulse used to make hummus, falafel, veggie burgers, and soup. Garbanzo foods are high in protein, fiber, micronutrients and antioxidants. Growing Garbanzo beans is good for the environment because the plants are water efficient and root nodules fix large amounts of nitrogen. Produced in a rotation with watermelons, residual soil nitrogen from Garbanzo beans may allow farmers to reduce fertilizer the following year for watermelons. • In this project the Webb City Farmers Market, in collaboration with horticultural professionals with University of Missouri Extension and Lincoln University Extension, will create traveling technology and tool kits for on-farm consultations as well as workshops. The kits will also be used as part of a Tools and Technology for Specialty Crops day of education at the Great Plains Farm Conference in St. Joseph, Missouri. The Webb City Farmers Market has found through more than ten years of farmer training that the most effective training includes hands-on experiences. This is particularly true when working with immigrant farmers and new farmers. Inspired by the Jessup Wagon developed by local and national agricultural hero George Washington Carver and based on the market's highly successful High Tunnel Installation Kit, this series of kits will bring current and breaking agricultural technology to the small and midsize specialty crop farmers of Southwest Missouri, including socially disadvantaged farmers and new farmers, and beyond. The kits include: A Pesticide Safety Kit with a Backpack Sprayer Calibration Kit; A Breaking Technology Kit including a drone suitable for agricultural applications, with required accessories and training, and several newly developed soil measuring devices; A Low Tunnel/Caterpillar Tunnel Kit with bending tools for creating frames and supplies for demonstrations; an Irrigation Kit, A Hand Tools for High Tunnels Kit, and an BCS attachment for creating raised beds in the confines of a high tunnel. 			

- Missouri State University will explore the heritability of winter cold tolerance and the characterization of genetic architecture of this trait in a cross between the Norton and Cabernet Sauvignon grape.

There are many limiting factors to grape production. One of the most challenging is that of winter cold damage. It is a worldwide concern but is especially important in cool climates. *Vitis aestivalis*-derived 'Norton' is the official grape of Missouri grown in regions with cold winter temperatures where *V. vinifera* (the European grape used for most wine-making worldwide, e.g., Cabernet Sauvignon) is not adapted. In view of this, a mapping population of 182 F1 individuals was constructed from a cross between Norton and Cabernet Sauvignon to study the genetic variation in dormant bud freezing tolerance and the underlying molecular mechanisms of cold hardiness. A consensus genetic map has been assembled with 411 simple sequence repeat (SSR) markers clustered in 19 linkage groups. In collaboration with the Cornell University-based VitisGen (www.vitisgen.org), 43,320 single nucleotide polymorphism (SNP) markers generated by genotyping-by-sequencing (GBS) have been identified, and the construction of a consensus map via SNPs is in process. In preparation for quantitative trait loci (QTLs) mapping on both SSR and SNP maps, phenotyping assays for dormant bud freezing tolerance will be developed. The ultimate goal of this project is to utilize DNA markers to expedite seedling selection and to optimize the production and quality of Norton-based hybrids for future cultivar releases.

- EarthDance Organic Farm School will enhance the competitiveness of specialty crops by increasing awareness among St. Louis-area growers of the profit potential of small-acreage organic vegetable production, and offering beginning and socially disadvantaged farmers, particularly in urban and suburban areas, hands-on training in "market garden" techniques. Growers will have the opportunity to gain these skills through EarthDance's 5.5 month, part-time Farm & Garden Apprenticeship or through an intensive weekend workshop led by one of the most successful farmer-entrepreneurs following this model. The market garden approach is characterized by the use of permanent beds, high tunnels, and appropriate tools to increase yields of high-value vegetables. These techniques enable producers to gross \$100,000+ per acre. EarthDance sees the need to grow a stronger, more confident cohort of organic producers in the St. Louis area. Farmers in St. Louis seem stuck on the challenge of earning a livelihood, but we know that in other regions of the country, local food production is a viable career. This training will enable beginning farmers to increase their yields and profits, and empower more aspiring farmers to endeavor new farm businesses, by increasing their confidence in the profitability of small farms. To further address this perception gap, EarthDance proposes to organize a delegation of farmers to attend the MOSES Organic Farming Conference in La Crosse, Wisconsin to learn from some of the nation's most successful vegetable producers and gain inspiration from the power of the high-functioning organic farming community of the upper-midwest region.
- The Department of Agriculture at Southeast Missouri State University seeks to evaluate polysulfate (48% SO₃ as sulfate, 14% K₂O, 6% MgO and 17% CaO) as an organic fertilizer for selected early season and full season vegetables. We also seek to evaluate polysulfate as a soil conditioner, with and without cover crop placement, to improve soil health, including soil structure. The three year project will initiate in the summer of 2017; however, we will fund the first year of operation and we only seek funding for the growing seasons of 2018 and 2019. Our extension partners include Lincoln University Cooperative Extension and the University Missouri Extension.
- The University of Missouri will continue an earlier survey of Missouri specialty crop businesses to enhance its reach across the state through winter grower conferences and events. Using survey results for validation and IMPLAN data, the Missouri specialty crops' economic contribution will be calculated for the state of Missouri and its counties. Creating awareness and understanding about the Missouri specialty crop industry is important to communicate value to its farmers, consumers, policy makers and other stakeholders.
- Downtown Joplin Alliance (DJA) and the Joplin Empire Market will expand current market share to specialty crop vendors through an innovative marketing campaign. There are a substantial and growing number of small specialty crop farmers across the Ozarks region, however markets to sell direct to the consumer are only serving a fraction of the Ozarks growers. Consumers in this area are demanding fresh, locally grown produce and are seeking out options to purchase specialty crops; therefore we propose a two-year project to develop the Joplin Empire Market in downtown Joplin, MO and increase sales for specialty crop producers. We will create a strategic marketing campaign with educational components directed to consumers based off specialty crops grown and sold at the market. This will also improve food access in underserved communities through the availability and education of specialty crops

- Lincoln University Native Plants Program will conduct a marketing and education project for native edible plants including nettles, wild leeks, glade onions and goldenglow as specialty crops. Experimental surveys will be conducted among farmers, chefs and communities to determine their perceptions about consuming, growing and buying native edible plants and products prepared from these and other native edibles during the first year of the study. Workshops, cooking demonstrations and Dining Wild events will be conducted in three regions: Central, West Central and Southeast, Missouri. Native edibles will be promoted as both fresh and value-added products in local farmers' markets. This project will be done in collaboration with local organic farmers in Kansas City, the Bootheel and Central Missouri and with NRCS and MU-Extension.
- Missouri State University will evaluate the effect of irrigation as a means of increasing tree growth and production of Black Walnut (*Juglans nigra* L.) in upland soil and evaluate improved cultivar performance by field grafting improved cultivars to black walnut seedlings established in the field. An existing Black Walnut planting located at the State Fruit Experiment Station in Mountain Grove, Missouri will be the site used for implementation of this project. The site is an agroforestry plantation of black walnut seedlings combined with forage production. Improved black walnut nut cultivars Emma K, Neel, Kwik Krop and Sparrow will be field grafted to seedling rootstock. The seedling rootstock was planted in 2013, making the trees ideal size for field grafting. The planting has both drip-irrigated and non-irrigated rows. Improved cultivars will be randomly assigned to irrigated and non-irrigated rows. The site is upland and typical of the Ozark region of Missouri. While this is not the usual habitat for native walnut, this study will provide answers to whether upland sites can grow productive walnut for nut production if irrigation is implemented. Determining if upland sites with irrigation are economically productive and assessing improved cultivars at this site will allow the potential for conversion of marginal farmland to agroforestry in southern Missouri. Results will be disseminated to growers and stakeholders through grower meetings and field days.
- This project, proposed by a researcher at the University of Missouri, is to determine ten commonly grown sweet potato cultivars for their resistance to a soilborne pathogen, *Fusarium solani*, which causes the *Fusarium* root rot. Without an intensive fungicide program, yield loss due to *Fusarium* root rot could be anywhere between 10-50%, or 100% occasionally. *Fusarium* fungi is also one of the three main genera that produce mycotoxins that adversely affect plant, farm animal and human health. Presence of *Fusarium* fungi and subsequent accumulation of mycotoxins can go undetected when disease symptoms are absent during postharvest storage. Therefore, identifying sweet potato cultivars that are resistant to this fungal disease is the most important and effective strategy to both conventional and organic growers. Our objectives of this proposed experiment are to screen and select sweet potato cultivars that are resistant to *Fusarium* fungi with comparable yield and tuber quality under Missouri's climate, and consequently enhance the competitiveness of this commodity. Both greenhouse and field experiments are proposed over a two-year period for achieving the objectives. In addition to yield, tuber quality and flavor, we also propose to evaluate soil microbe population and activity for determining their interactions as influenced by *Fusarium* isolates. Results generated from this proposed project will be disseminated to stakeholders through a couple of grower meetings, extension fact sheet, and an onsite Field Day. The outcomes will be evaluated by surveys at the Field Day and the grower meeting.
- The University of Missouri-Southwest Research Center will expand research on the horticultural production of elder flowers, and to study their health-giving metabolites. Both the fruit and flowers of elderberry are consumed for food and as dietary supplements for their well-known health benefits. North Americans primarily consume elderberry fruits for their anti-oxidant effect, whereas Europeans typically consume elder flowers for their proven anti-viral properties. As the health benefits of elder flowers are becoming well-known, the demand for U.S.-produced elder flowers is increasing. However, elder flower production in Missouri has not been studied, and we do not know the potential productivity or economic return from flower production. Additionally, we do not know the impact of harvesting a percentage of elder flowers on resulting fruit production. We believe that a portion (perhaps 25%) of flowers can be harvested without significantly reducing fruit yield, and most likely actually improving fruit quality and berry size. If proven, this could create a second high-value specialty crop from the same plantings without added production cost. Additionally, as demand for elder flower products is increasing, we need a much better understanding of the dietary and medicinal constituents of American elderberry flowers, especially their anti-viral capacity. Such information will pave the way for development of a robust elder flower industry which will increase the competitiveness of current and future elderberry producers. The results of this project will be disseminated to elderberry producers and consumers via Field Days and Growers meetings, and will be published in appropriate scientific journals.

Montana Department of Agriculture

Amount Awarded:

\$1,265,281.80

Number of Projects:

10

- Montana State University will conclude the disease survey project in 2018-2019 by characterizing detected putative pathogens with respect to pathogenicity and screening dry pea varieties for resistance to confirmed pathogens of economic importance.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- This project by Montana State University focuses on dry pea production in Montana but will benefit lentil, chickpea, dry bean and potato production since dry peas are often grown in rotation with these crops. *Aphanomyces* root rot is a major threat to the pulse crop industry, and has driven dry pea acreage out of areas in Canada and North Dakota. Once *Aphanomyces* is established in a field, the rotation interval for dry pea is recommended at 8-20 years, which is not sustainable for the industry. Prevention is highly preferable to management after infestation, as this disease is very difficult to control. Here, project partners will validate soil bioassays for *Aphanomyces* root rot, develop quantitative molecular methods of detection of *Aphanomyces*, and use this information for deployment of a robust, accurate soil test that will give information to farmers on the risk of *Aphanomyces* root rot on their farm.
- Montana State University will conduct a research experiment at the Eastern Agricultural Research Center (EARC) in Sidney, MT to evaluate the response of pea and chickpea to irrigation management. The study will provide a useful, practical, and easily implementable knowledge to growers.
- The Montana Department of Agriculture Marketing and Development Bureau (MDA) will utilize Specialty Crop Block Grant funds to conduct market research, development, education and outreach activities for emerging specialty crop industries in Montana. Burgeoning crop industries such as hops, wine grapes, cider and juice apples, and numerous varieties of cold-hardy berries growing in Montana will benefit from an in-depth market analysis of their current state and industry specific plans for growing, processing, adding value, and marketing each crop.
- Building on the previous SCBG by Montana State University researchers on huckleberry pollinators, this project will begin the first documentation of occurrence and distributional documentation of the native bees of Montana.
- This project developed as a collaboration between MSU-Western Ag Research Center and the Montana Grape and Winery Association (MGWA) will facilitate growth of Montana vineyards and wineries through research and outreach.
- The Northwest Cider Association proposes a hard cider focused specialty crop grant. The goal of this forward-thinking project is to increase consumer awareness of the value of specialty crops through education and market development of the burgeoning Montana cider industry. This project strategically develops new markets for Montana cidemakers through industry, consumer, and media education.
- The short-term goal of this project is to continue to evaluate which small fruits are productive and profitable. Montana State University is currently testing over 50 varieties of small fruits including elderberry, dwarf sour cherries, currants, aronia, and haskaps at four sites across the state. The mid-term goals are to provide this information to producers and consumers and investigate effects of management and environment on fruit quality with a focus on antioxidant concentrations. Our findings will be communicated to fruit-grower and fruit-buyers through field tours and publications in a variety of media. The ultimate goal is to increase both the supply and demand for Montana fruits and contribute to the growth of this niche market. The success of the variety trials will be measured, in part, by identifying the most productive and profitable types. Educational and outreach goals will be measured using focus groups and surveys.
- Organic Seed Alliance will work directly with agricultural economists, five organic specialty crop farms, and national seed companies to develop: enterprise budgets for seed production of seven crops; economic case studies of the participating farms; and a seed economics manual, eOrganic webinar, and in-person trainings to help grow Montana's organic seed production capacity and infrastructure.

Nebraska State Department of Agriculture

Amount Awarded:	\$599,611.30	Number of Projects:	13
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- The University of Nebraska – Lincoln (UNL) will reduce inputs and increase yield of broccoli and pepper by determining optimum application rates of seed meals for integrated management of weeds and nitrogen fertility across four locations in eastern Nebraska.
- The University of Nebraska-Lincoln (UNL) will increase tomato yield and quality while reducing irrigation and synthetic nitrogen fertilizer use in Nebraska through the adoption of water and nutrient use efficient hybrid tomato rootstocks and carbon-based fertilizer amendments.

- The University of Nebraska – Lincoln (UNL) Industrial Agricultural Products Center will develop biodegradable mulch film formulations based on blends of various renewable raw materials, evaluate chemical and physical properties of resulting films, and evaluate application of resulting films in specialty crops such as tomatoes and peppers in greenhouse and field trials.
- The Nebraska Department of Education’s (NDE) Harvest of the Month (HOM) Program is designed to increase the use of local specialty crop products through the School Meals Program. This will be accomplished by developing a toolkit for school food service staff highlighting recipe development, activities featuring nine specialty crop items, program technical assistance, and training to specialty crop producers to connect with schools to offer specialty crop products during the school year.
- Nebraska Department of Agriculture oversight
- The Nebraska Winery and Grape Growers Association (NWGGA) will strategically plan and conduct a Needs Assessment and Strategic Plan with grape growers, winemakers and winery owners across the state in order to develop a program that will implement sustainable practices leading to certification termed as “Nebraska Sustainable.” This will reflect their enhanced ability to promote the adoption of practices that are sensitive to the environment, respond to societal needs and interests, and make it economically feasible to implement. It will improve the economic vitality of vineyards and wineries in order to continue producing high quality grapes and make delicious wines while promoting stewardship as a quality agricultural specialty crop. The efficacy of the Nebraska Sustainable program that will be created and piloted within the industry will be evaluated for continued improvement so that the program can be emulated by other sustainable crop
- The University of Nebraska – Lincoln (UNL) will investigate the effect of high pressure processing (HPP) technology on Nebraska grown aronia berries for the improvement of safety, quality, and nutritional value of Nebraska grown aronia products and to develop a novel pasteurization approach for aronia products processing.
- The University of Nebraska-Lincoln (UNL) will manufacture high-quality protein isolates from dry edible beans and identify their potential application opportunities as functional ingredients mainly in the food industry. To fulfill this goal, the extraction methods of protein from three dry beans including great northern, pinto, and navy beans will be optimized. The functional properties of these protein isolates will be studied and their potential applications as baking, foaming, and breadening ingredients will be determined and introduced to the food industry and academia.
- The Arbor Day Foundation (dba Arbor Day Farm) will investigate the feasibility of eliminating or reducing chemical pesticide spraying for disease control in apple orchards via the usage of ozone technology. This is believed to become a part of the “educational story” told in order to enhance sustainability of the orchard/fruit industry while also enhancing consumer safety worker protection and grower stewardship, particularly at u-pick operations.
- The Nebraska Department of Agriculture will increase consumer knowledge about eating more specialty crops and will record the number of consumers who will report an intention to eat more specialty crops by hosting a series of cooking demonstrations at the Nebraska State Fair from 2018 – 2020 using fresh, nutritious, locally grown specialty crops. This project is based upon the widely believed notion that the consumption of fruits and vegetables results in healthier, longer lives. Purchases of specialty crops from local growers will benefit producers, the economy, and stimulate the demand for specialty crops.
- The Nebraska Winery and Grape Growers Association will expand the use of drone technology to the specialty crop industry of viticulture via application to the leaf indexing procedure in order to monitor possible herbicide drift impact, provide valuable information on symptoms of injury and aid in the investigation of such incidences. This will significantly reduce the time and labor intensity of the process thus making the process sustainable for the grape grower. The accuracy and reliability of using this drone technology will be evaluated. Results and demonstration of the project will be disseminated to the specialty crop industry via field day and conference.
- The University of Nebraska will evaluate the suitability of chickpea production in dryland production systems of western Nebraska by measuring the amount of soil moisture required to produce adequate seed quality and yields. Chickpea cultivars will be grown under different levels of soil moisture and limited irrigation to determine which cultivars are best suited for use in dryland systems and the amount of soil moisture required to successfully produce a satisfactory crop. The impact of chickpea production on soil parameters and the following crop yields will be recorded. Results will be shared with stakeholders through grower meetings, field days, publications, and digital forms that include Twitter, YouTube, and CropWatch.

- A trial will be established over three years by the University of Nebraska Panhandle Research and Extension Center (PHREC) Weed Science program located in Scottsbluff, Nebraska to compare the competitive ability of dry beans and field peas to suppress herbicide-resistant pigweed species. The trial will be located in an area heavily infested with herbicide-resistant pigweed. Dry beans will be planted at both 8 and 22 inch row spacing, corresponding to conventional and direct harvest practices, Peas will only be planted at 8 inch row spacing. Within each crop and row spacing a treatment in which both herbicides are and are not applied will be imposed. Comparisons of non-herbicide and herbicide treated plots will allow the establishment of the competitive ability of each crop and a measure of the value of adding herbicide to the cropping system. Weed abundance, weed biomass, and crop yield will be measured in each plot.

Nevada Department of Agriculture

Amount Awarded:	\$249,642.12	Number of Projects:	10
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- Urban Roots plans to serve as a model, a source for inspiration, and an educational hub focused on a specialty crop dedicated to cherries and a unique planting and harvesting technique called Upright Fruiting Offshoots (UFO). Urban Roots will plant twelve late blooming cherry trees and trellis them using the UFO technique, a proven production model for growing cherry trees in harsh climates. Urban Roots will offer three annual workshops to benefit those in our community interested in learning more about using the UFO planting method and growing high-quality specialty crop produce. Urban Roots will award fifteen scholarships to adults for UFO the workshop series and teach students ages 5-15 about this planting technique through exposure during our programming.
- 702 Farm will develop a specialty crop consortium that will conduct targeted marketing campaigns to benefit multiple specialty crop members, and will open up avenues of access to a larger base of consumers for the SNV specialty crop growers. Through collaboration, we will develop an online Farmstand (potentially) called “Vegas Veggies” that will be used by all interested Southern Nevada growers to sell their crops and products to customers at retail prices. The online farmstand will enhance market opportunities and increase access to local (Nevada grown) specialty crops.
- The University of Nevada, Reno Desert Farming Initiative (DFI) will provide expanded organic propagation service to Nevada farmers in order to encourage the expanded planting of specialty crops and variety of specialty crops planted. The project will also continue to save farmers money by providing a local nursery option for the agriculture industry over commercial operations that are available in other states – costing the farmer valuable time away from the farm and money for transportation or shipping. The propagation greenhouse is used as an education facility for University students, K-12 students and the community.
- This project will develop sustainable models of Community Supported Agriculture (CSA) for specialty crop producers. CSAs are a means for producers to sell specialty crops directly to consumers through a
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subscription method involving pre-payment and receiving food boxes throughout the harvest season. In recent years, many CSAs have begun to struggle due to changing consumer preferences and due to competition from pseudo CSAs, non-farm food delivery systems. This project will help develop new models that are profitable and efficient for growers and will also meet consumers’ changing needs.
- The Greenhouse Project is excited to begin a new partnership with Carson Tahoe Health. At the campus in north Carson City a high tunnel (960 square feet) will be built, and The Greenhouse Project staff and AmeriCorps members will help oversee this new partnership. Ground breaking for the high tunnel will occur in June, and we anticipate growing there this summer. All of the vegetables and herbs produced at the new location will be donated to the local Meals on Wheels Program run by the Carson City Senior Center.
Continuing to work with AmeriCorps members, who receive a stipend, will be the primary goal of this project, ultimately equipping them with the knowledge, confidence, leadership, and skills to be able to have a future career in the growing and production of specialty crops in Nevada and beyond. Additionally, the outreach, education and next generation grower education that will occur is the primary goal, with the secondary benefit being the donation of produce as the next generation growers are trained.

- Demlu ‘uli Mongil, ‘Grow Food’ is an organic community garden first established in March, 2016 on the Dresslerville ranch, on land now owned by the Washoe Tribe of Nevada and California. Demlu ‘uli Mongil farmers will implement a researched-based, best-practices watering system, a vegetable garden expansion, and the restoration and renewal of an old fruit tree orchard, providing food justice and food education for all Dresslerville Community members, including Head Start students and Elders who depend on receiving meals from the Dresslerville Elder’s Center.
The project’s outcomes will be doubling the footprint of the current tribal community vegetable garden from 100’x100’ to 200’x200’, and designing, installing, and maintaining a state-of-the-art drip irrigation system to both the truck garden and the 8 remaining drought-tolerant fruit trees on the ranch. In the fall of 2018, we plan to run irrigation to 20 new fruit trees and a traditional berry patch we have planned for a ditch adjacent to a creek running close to our current plot. In Year 3, we will establish a Tribal Culinary Herb Garden, and a Medicinal Healing Garden, complementing an evolving education program developed for students and their grandparents by Washoe Tribal TANF Language Teachers and Dresslerville Community Elders.
The development of this garden has come from community Elders and it will continue to be directed by Elders. Building in generosity of spirit by volunteering to raise food for community wellness--challenging the legacy of diabetes and heart disease in tribal communities--requires a community effort, and education is most effective in a hands-on setting where families have access to fresh food, seeing best-practices in organic agriculture served at their own tables.
- The University of Nevada, Reno, will determine how tomato rootstocks can improve plant response to low soil temperatures early in the season and benefit growers through earlier plantings and higher yields. Trials under hoop house conditions will be conducted with several tomato rootstocks and evaluations on physiological and morphological root responses evaluated to determine important traits under low soil temperatures in the high desert. Results will be disseminated to stakeholders through grower meetings and field days. We estimate that of the >100 vegetable growers in Northern Nevada, 50% (~50 growers) will adopt the use of tomato rootstocks in the first 2 years after the completion of the project.
- The Polygrarian Institute (PI) is a 501(c)3 nonprofit organization with a vision to grow the next generation of conscientious farmers, innovative educators, and sensible leaders who will collectively push the pendulum of local food production in a new direction through intensive training and mentorship programs at our public teaching farm. Students will experience the interconnectedness of food systems and develop contemporary methods to deploy effective change in our community all the while growing more food within our region.
Our organization is governed by an enthusiastic Board of Directors comprised of some of our area’s most vocal advocates for sustainable local food systems and our operational team consists of a devoted collective of local food and community health promoters that have demonstrated experience in the areas of entrepreneurship, small business management, small scale commercial farming, education, nutrition, and fundraising.
Our mission is cultivating community based food systems through education, research, & civic engagement.
- The WNC Specialty Crop Institute will develop a unique farm to table event “Supper in the Street”, a community-based celebration of local food that will highlight Nevada’s specialty crops. The dinner will be held on a downtown street in Fallon, Nevada. It will be a ticketed event, reasonably priced and targeted to middle class consumers. Supper in the Street will differ from upscale farm to table events that are high priced and unaffordable for many consumers. An event guidebook will be published upon completion of the project for use by other communities that want to replicate this type of agritourism event.
- As a catalyst for agriculture education in Northern Nevada, Mountain View Montessori will embark on a new project called School Salad Bar that will support specialty crop production, consumption, and research in the region. With the help of graduate students from the University of Nevada-Reno Department of Agriculture, this project will establish best practices for the growth of hydroponic lettuce, create a salad bar program that utilizes regional crop varieties, and develop resources for teachers wishing to offer their own school-grown salad bars.

New Hampshire Department of Agriculture, Markets and Food

Amount Awarded:

\$255,875.50

Number of Projects:

6

- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

- The NH Dept. of Agriculture, Markets & Food (NHDAMF) will continue a successful partnership with the NH Division of Travel & Tourism Development to promote the purchase of local New Hampshire Specialty Crops by visitors to New Hampshire from neighboring states and regions. The purpose of this project is to continue to build awareness and encourage purchases of New Hampshire Specialty Crops which will then help to build the number of farmers producing specialty crops in the state. The number of farms in New Hampshire has grown 5% since 2007 (Census of Agriculture, 2012) which illustrates the increasing demand for local products and the increasing number of farms attempting to meet that demand. This is indeed positive news when the national trend is a 4% decline in farm numbers. Among specialty crop farms, New Hampshire saw a 16% increase in farm numbers since 2007.
- New Hampshire, and America as a whole, is becoming more diverse. This diversity includes the specialty crop foods that people eat. New Hampshire has an increasing diversity of New American families becoming agricultural producers and working on growing foods that were available in their homelands. But, many of these New American farmers want foods that originate in warmer climates. The purpose of this project is two-fold: examine ways to grow more ethnic specialty crops in New Hampshire's temperate climate and to market the specialty crops available in New Hampshire. To achieve the goal of this project, MCCD will work with a core of project partners in Central New Hampshire that will help in identifying the best varieties of ethnic specialty crops that will grow in New Hampshire's temperate climate, investigate the effectiveness of season extension with the use of hydroponics, and develop a marketing plan for ethnic crop agricultural producers that will highlight the uses of ethnic vegetables and the availability of SNAP/ EBT incentive programs assisting families in the purchase of these ethnic crops.
- Plant Something NH is a program of the New Hampshire Plant Growers Association (NHPGA), founded under a 2015 Specialty Crop Block Grant and adopted in 2016 for New Hampshire, as part of a national grassroots campaign with a mission to promote public awareness of the health, environmental and economic benefits of plants to increase consumer support of local growers, nurseries, garden centers, landscapers, and affiliated trades. A marketing plan built around a strategy to "Grow Market Share by Growing Mind Share," was developed during 2016 and a library of supporting marketing resources were introduced and made available in January 2017 to encourage growers, affiliated merchants and trades to adopt and promote the Plant Something NH message. The Plant Something NH consumer education campaign was launched in February 2017 with a schedule of events and promotions across various channels, including broadcast television, radio, print, social media and other digital platforms.
- The Cheshire County Conservation District will work with partners to offer education, technical guidance, and equipment resources for NH vegetable farmers interested in transitioning to no-till management systems. This will include working with farmers to establish conservation tillage demonstration sites to offer opportunities for peer to peer learning through field days and grower meetings.
- The project will help small and beginner farmers with training to for today's markets. For farmers to succeed in a very competitive market, the farmer must assess learn specific skills to be able to make a profit from a small farm. This project will address the needs of each farmer and offer trainings become successful market farmers.

New Jersey Department of Agriculture

Amount Awarded:	\$671,657.72	Number of Projects:	11
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- This grant will enable the Outer Coastal Plain Vineyard Association to maintain a "mother block" of northern Italian varieties for current and future propagation, assist in the initial distribution of these varieties to our region's growers and promote the potential of these varieties to our region's viticulture industry.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- New Jersey remains in the nation's top 5 states for blueberry production. Last year, New Jersey blueberry growers produced over 65 million pounds. Each year, acreage devoted to cultivated blueberries continues to increase, both domestically and internationally. This increase in competition has made it necessary for the New Jersey Blueberry Growers Association to find ways to maintain existing market share, as well as increase new markets. We believe that given our resources, a radio campaign would maximize our assets most efficiently, and enable us in reaching consumers throughout our marketing area.

- New Jersey is recognized for its diverse agriculture, ranking in the top ten states nationally for production of a variety of specialty crops. The New Jersey Agricultural Leadership Development Program will equip specialty crop producers and industry leaders with the knowledge, skills, and network to effectively promote and enhance specialty crop production. This educational training promote will assure that New Jersey continues to be at the forefront of the specialty crop industry. A series of seminars including specialty crop production tours, guest speakers, “hot topic” discussions, and practical leadership exercises will expose participants to a variety of innovations and perspectives. Class members will be introduced to new concepts for advancing production on their farms, marketing techniques, and effective communication with the media and consumers. In teams and individually, the class will utilize the skills they learn to carry out practical exercises to promote specialty crops. The grant will provide support to expand upon a well-established, successful program. The success of the program will be measured by the level of participant growth in their knowledge and skills to advance specialty crop production. This project will be managed by the New Jersey Agricultural Society.
- The Garden State’s rich agricultural heritage is rooted in generations of family operated farms primarily supported through the production of specialty crops such as fruits, vegetables and horticultural products. Due to New Jersey’s high population density, and other resulting economic factors, our growers cannot always be the lowest cost producer of specialty crops. Due to the prevailing 52 week availability and commodity based pricing structure for most commercial packs of specialty crops, often growers in New Jersey are at a disadvantage because of a limited growing season and higher production costs.

Agricultural producers unable to compete based solely on the attribute of price must find a means of compensation to stay competitive in the marketplace. Three possible ways to compensate are to offer a unique non-commodity product, offer higher quality or find a way to add value. Specialty crop growers in New Jersey use the Jersey Fresh brand to differentiate their product as higher quality and as locally grown as a means to add value. Through the Specialty Crop Block Grant Program our agency seeks to improve the promotion, and market value, of locally grown specialty crops through an expansion of the Jersey Fresh advertising and promotion program.

- The Reutger's University's projects objectives are to refine the factors that are contributing to honey bee loss in NJ that are increasing costs to both beekeepers and fruit growers who contract for pollination services. The factors, which likely include disease and parasite stresses in addition to pesticide residues, will be compared in 4 treatments: Sentinel hives placed in commercial blueberry bloom, cranberry bloom, both blueberry and cranberry bloom, and wild conditions. Disease and Varroa mite incidence will be measured along with pollen collections for pesticide residue analyses. All measurements will be taken over a 2 year period. Commercial hives will also be measured in the same way. Results will be used to help improve grower and beekeeper management practices and decrease bee loss. Results will be used in presentations at blueberry and cranberry grower winter meetings and spring update meetings.
- The New Jersey cranberry industry is the third largest in the nation, covering 3,000 acres with a production value of \$22.2 million (nass.usda.gov). Cultivated cranberries are self-fertile or can be cross-pollinated with wild cranberries, producing fruits with viable seeds. Germination of these seeds are considered as off-type varieties and characterized by lower fruit yield potential and often higher vegetative vigor. Contamination by off-types decrease long term productivity of planted cranberry beds and reduce profitability for the New Jersey cranberry industry in an increasingly competitive environment. Currently there is no scientifically validated knowledge pertaining to cranberry seed germination physiology. A survey of current practices to control off-types will be initiated to serve as a baseline for evaluating the adoption of recommendations that this research will generate. The use of a seed germination chamber allows for the evaluation of different environmental factors and control strategies on cranberry seed germination. Thus, allowing taking advantage of agronomic practices that are unique to cranberry cropping for controlling cranberry seed germination. This program should improve cranberry yield potential and crop productivity while addressing environmental concerns by optimizing the longevity of cranberry beds. The use of this germination chamber has the potential to help in defining new weed management strategies for specialty crops based on hampering weed seed germination, especially in a context of rapid spread of multiple herbicide resistance in challenging weeds. This project will be managed by Rutgers University.

- The New Jersey Nursery and Landscape Association seek to further develop a Plant Something Campaign started using SCBG funds awarded in FY2015. Our aim with this project is to continue to expose consumers in New Jersey to the successful Plant Something promotion being implemented around the country with a goal of increasing the sale and use of New Jersey grown landscape flowers, plants and trees. Previous projects awarded to other states have helped develop the basic tools, branding, and promotions making this a cost effective marketing program utilizing previously created content. This proposal seeks to build upon the groundwork being laid in 2015 and 2016 and expand the program and broaden its reach. This campaign has had meaningful and measurable impact across the country, including national trade press attention, and is currently licensed by twenty-two states and one Canadian province. New Jersey is already a licensee of this program, and a grant award through this program would allow for further participation in this award winning industry promotion.

As the issue of invasive species and the promotion of the use of “native plants” becomes increasingly popular, the New Jersey Nursery and Landscape Association understands that there are “invasive plant” lists being circulated to municipalities and government agencies that are very far reaching and include common plants in nursery production and landscape installations. We would like to encourage consumers in a positive way to “plant the right something” and hope to incorporate the already-successful Plant Something Campaign to educate and inform the consumer.

- The purpose of this project is to enhance the visibility and image of our Jersey Fruit Cooperative family run farms through a multipronged advertising approach to reach consumers and retailers/suppliers. Marketing toward consumers will highlight our farms “local” and “sustainable” platforms while industry marketing will be directed toward product safety and quality. Consumers are consistently demanding local produce, sustainably grown by small family farmers. Educating consumers and suppliers through marketing and advertising is the perfect way to get our story out and bring attention to specialty crops grown in New Jersey. Yearly sales records will be compared In order to verify if our marketing campaign is reaching our intended audience.
- For the past 67 years, the New Jersey Peach Promotion Council (NJPPC) has conducted successful and changing promotional programs for the orderly marketing of the New Jersey peach crop. Our success in recent years has been in promoting the quality and availability of locally grown, nutritious and delicious Jersey Fresh peaches; compiling the NJ Peach Buyers’ Guide and distributing it to consumers retail, grower retailers and shippers, institutional and wholesale buyers, allied industry; planning and staging various media events; consumer and produce merchandising contests, coordinating retail promotional events; providing education and information to consumers, buyers, and the media via print advertising, website and other social media information, and personal contacts and via audio and video methodology; and conducting new peach variety and other product and handling research. Every area could be expanded with increased financial and qualified human resources.

The focus of this project is to have a media and promotional presence in the New Jersey metropolitan area including Philadelphia and New York New England and possibly beyond this geographical territory. There are more than enough consumers in New Jersey to utilize the entire New Jersey peach crop but not enough informed buyers to know why they should buy and utilize New Jersey peaches over competing produce items, and peaches and nectarines from other production areas.

- Postharvest losses of strawberries and other specialty crops is estimated to be as high as 25% due to disease, dehydration and over ripeness, resulting in economic losses to farmers and consumer dissatisfaction. To solve this problem, plastic film packaging containing anti-microbial essential oils were developed to control ripening, disease and water loss of fruit. This project will bring anti-microbial packaging technology to the organic and conventional strawberry grower resulting in increased fruit freshness and storage life. These attributes will be determined by evaluating disease incidence, fresh weight and fruit firmness, for postharvest treatment with anti-microbial films compared to conventional storage at six NJ direct-market farms. Farmers and consumers will also evaluate the fruit for taste and aroma through survey instruments. The project results will be publicized through extension bulletins, trade journals, two twilight meetings with 60 growers, and a winter meeting with 100 growers. The technology is suitable for other fruit crops and cut flowers and can be used for specialty crops immediately after harvest for either short-term on-farm storage, or during shipping to local markets. This project will be managed by Rutgers University.

New Mexico

Amount Awarded:

\$502,748.58

Number of Projects:

6

- The Issachar Calling's main mission is to provide quality education to our local communities in the areas of self-sustainability and health promotion. One very important aspect of self-sustainability and health promotion is educating our community through agricultural workshops, training, marketing tools, help lines, websites and demonstrations. We also strive to enable local farmers through providing them with free resources such as on site consultations, free trees, seedlings, educational materials, plants, and seeds. Currently, we operate our project one mile from the Navajo Native American Reservation line. We are also about 9 miles from a major reservation city by the name of Shiprock, New Mexico is a very special area because it is a very large farming community. We are in a very rural area as well, so obtaining fresh, local produce especially fruits and vegetables is not very easy. We are in an area which is considered a food desert.

For this reason we started our project in this location. Our Agricultural Workshops specifically focus on specialty crops such as fruits and vegetables. Through workshops, trainings and demonstrations, we hope to achieve the following outcomes: educate local farmers in the importance of healthy soil through various trainings and workshops by an expert soil scientist, expand agricultural knowledge through organic gardening workshops, provide local farmers with free or low cost solutions for materials and supplies, expand marketing knowledge through local farmer's markets and also help local farmers with higher crop yields through educational efforts. In addition, we will establish a local hotline that will provide free consultation services to farmers and residents that are in need of consultations. A zoom account will also be created in case any residents or farmers would like to hold any meetings with various members of the community with our consultant soil scientist. He will be dedicating 10 hours per week to providing phone or Zoom/Skype consultations. We will conduct a series of five major workshops (all will include hands on demonstrations) and three mini trainings. The workshops will be conducted by experts in the field and also local traditional Navajo Farmers that have an extensive knowledge of agriculture in the area. The workshops will be held in local community farms and community gardens and will be open to the public free of charge. Pre-Registered participants will have the opportunity to receive take home supplies. The topics will include: irrigation systems, obtaining a large hands-on demonstration will be conducted at the beginning of the planting season where participants will be provided with free seeds, seedlings, trees and educational supplies such as manuals and handouts. Participants will also be able to haul off wood chips and supplies as needed for garden startup. Free consultation services will also be available throughout the planting season (9 months-fall, spring, summer). In addition, we will create a website that will have all the workshops, trainings and demos on video for free and with the option to download for free as well. All PowerPoint material will be uploaded and all educational handouts will be also uploaded. A dedicated staff member will answer emails concerning any questions that local participants may have and also will be dedicated to keeping the website current. All events will be posted on the website as well. Our soil science consultant will also conduct on site consultations after each workshop for 2-3 days as needed. Our focus will be on specialty crops in particular fruits and vegetables. Tree donations will be given to participants as well as seedlings and seed to help them start a garden. Educational handouts will be provided during each workshop and manuals as well. Various networking events will be held that will include the local farmer's markets associations, local farmers, and vendors as well as community stores that are willing to buy produce locally. Marketing workshops will be offered to local farmers and residents that are interested.

Our soil science consultant (Micheal Rocky Tyler) will cover the following topics:

 1. Winter cover crops- crops that can be grown during winter and cold months, greenhouse demo and creating an affordable and easy green house. Participants will be able to have crops year round!
 2. Soil wind erosion (wind extreme erosion due to sand storms) prevention through dry land cover crops. The idea is to teach local people how they can prevent wind erosion by planting cover crops that are drought tolerant.
 3. Workshops on soil moisture retention through organic matter addition.
 4. Range land management workshop for maximum soil organic matter.
 5. Electric fence system- how to install a good electric portable fencing system. Used to teach participants how to install electric fencing system to control livestock on range-land. This topic goes hand in hand with range land management for maximum soil organic matter.
 6. Soil Health, soil science (basic and easy to understand), crop health, good soil for maximum crop yields.

All tools that will be purchased for workshops will be loanable to participants for a deposit fee based on the value of a tool. Micheal Rocky Tyler has a Bachelor's degree in Crop and Soil Science with a minor in Horticulture and is pursuing a Master's degree in Soil Science from Oregon State University. He has over 5 years of agricultural and organic farming experience and has conducted many workshops all over the country, including our location.

- The New Mexico State University will optimize jujube drying parameters, develop jujube processed products and microencapsulate the active compounds present in jujube, to expand the marketing options for jujube growers and purchasing choices for consumers, and make the information available through website, workshop, and Field Days. We will conduct market testing to assess consumer acceptance, preferences and buying potentials for these processed products.
- New Mexico Department of Agriculture oversight
- The project entails conducting educational workshops at culinary and food and beverage events and institutes to increase awareness, competitiveness, and access to New Mexico Specialty Crops. New Mexico Department of Agriculture (NMDA) staff will coordinate with culinary professionals, growers, processors, and other food and beverage professionals to plan and execute these workshops on state, regional, and national levels. The venues will include culinary institutes, food and beverage trade events, classrooms, lab kitchens, and others. The workshops will include educational segments, tastings, and preparation and access discussions. A social media component will be used to increase traction and awareness of the featured specialty crops including media (videos, graphics, etc.) that can act as teaching aids, event announcement platforms, and more. All crops used will be unbranded to avoid marketing any businesses and workshops and discussions will focus on nutritional information, flavor profiles, seasonality, preparation and handling, storage in commercial establishments, and traditional and non-traditional ways of cooking with said crops.

- 1. Healthy Futures, Inc.

2. Over 160 families in Ojo-Encino and Torreon chapter house locations will receive delivery of fresh fruits and vegetables grown by local farmers from Cuba, NM, and supplemented by additional supplies of fresh fruits and vegetables, delivered four times per month, via a mobile farmers market during an extended five month growing and harvest cycle. At the same time program staff will interact with families to showcase healthy nutritional meal planning.

FOR EXAMPLE:

The ABC University will mitigate the spread of citrus greening (Huanglongbing) by developing scientifically-based practical measures to implement in a quarantine area and disseminating results to stakeholders through grower meetings and field days.

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Specialty crops delivered by the mobile farmer market to the chapter houses will be purchased by Native American consumers.

As Native American consumers purchase the specialty crops at their respective chapter houses, they will learn how to consume, preserve and/or prepare a variety of new fruits and vegetables related to the desired outcomes of our project.

3. The collaboration between Healthy Futures, Inc. and Hasbidtio will create pathways to remedy Native American food deserts at two Navajo chapter houses by employing a mobile farmer's market network and delivering fresh fruits and vegetables to these residents. In addition, our partnership will provide target populations with nutritional education to reduce the incidence of obesity. It will also offer academic horticultural knowledge and guidance about relevant farm management resources so that rural farmers may increase the variety of crops they grow as well as extend their growing seasons during the three year grant cycle.

- NMSU will perform experiments to determine the impacts that deficit irrigation will have on alternate bearing in pecan. Pecan seedlings in a greenhouse setting will be subject to water stress and the impacts of water stress on the trees will be measured. These include stomatal conductance, photosynthesis, carbohydrate production and hormone production. The impacts of deficit irrigation of pecan tree flower production will also be evaluated in a field setting. We will measure the direct impact of water stress on carbohydrate and phytohormone production within the trees and its effect on flowering and ultimately pecan nut production on trees. Also, the impact of applying plant growth regulators on alternate bearing status of trees undergoing water deficit will be measured.

New York State Department of Agriculture and Markets

Amount Awarded:

\$1,167,256.05

Number of Projects:

10

- Using new molecular diagnostic methods, Cornell University will conduct fire blight risk assessment by quantifying survival rate of causal bacterium *Erwinia amylovora* in apple and pear wood cankers as main sources of infection, to improve accuracy of fire blight prediction models, prevent unnecessary bloom sprays, enable and implement new pruning practices for management, and disseminate results to growers via extension meetings, on-farm visits, field days, journals and blogs.

- Cornell University researchers will produce tomato lines with enhanced early blight (EB) tolerance and late blight (LB) and Septoria leaf spot (SLS) resistances. The task in this proposal are to 1. Genetically map the gene for stem-fruit EB tolerance, and develop molecular markers for it. 2. Use disease screens and genomic analysis to map the gene/genes for leaf-EB tolerance, and develop molecular markers for it/them. 3. Use EB markers, disease screens, and existing backcross populations to develop new lines possessing BOTH forms of EB tolerance, in the background of our best LB/SLS resistant lines. 4. Test several lines with either vs both forms of EBT by lab screens and in grower field plots to determine their relative degrees of EB control.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Spider mites and powdery mildew are the principle biological threats to sustained hop production and effective and sustainable management strategies and tactics for these pests are needed. Cornell University will address these needs by: 1) Evaluating the use of applications of mineral oil and foliage management to simultaneously control mites and mildew. 2) Determining the best timing strategy for managing mites. 3) Developing non-chemical means to manage mildew and mites by using specific wavelengths and intensities of light.
- The Institute for Food Safety at Cornell University (IFS@CU) personnel will develop educational materials and extension trainings to assist specialty crop growers in better understanding sanitary design and implementing sanitation procedures to reduce microbial and chemical food safety risks on farms and in packinghouses.
- The farm to school infrastructure will improve the school's ability to procure and/or process New York-grown specialty crops which will not only improve school nutrition, but also increase children's exposure to and consumption of New York fruit and vegetables which may ultimately increase awareness of and demand for New York specialty crops.
- The New York State Specialty Crop Advisory Committee has recommended the Department receive \$126,638.55 in funding for years 2018 and 2019, to exhibit at the New York Produce Show and Conference (an event sponsored by the Eastern Produce Council), which will give the Department the opportunity to represent multiple specialty crop industries (wine and grape, apple/ cider, and maple), in order to meet and interact with the industry's finest produce suppliers as well as the industry's leading service providers and representatives of the food and beverage industry.
- Cornell University will identify superior seed treatments for early season disease control and improve crop stands in conventional and organic table beet fields. Findings will underpin the expansion of the table beet industry in New York.
- In a previous Specialty Crop Block Grant project, the Cornell University, Plant Disease Diagnostic Clinic staff were able to survey New York State for the presence of the oak wilt pathogen, *Ceratocystis fagacearum* and incorporate molecular procedures into testing methods for a more rapid diagnostic process. To build on that previous work, the Clinic staff will improve diagnostic capabilities by evaluating media recipes to optimize growth of the pathogen and reduce contaminants, increasing outreach efforts to convey knowledge about oak wilt and to stress the importance of early finds, developing a real time qPCR that will reduce sample processing time and increase numbers processed and if time permits, developing a multiplex PCR that also tests for *Xylella fastidiosa*, the bacterial leaf scorch pathogen.
- Working in collaboration with 25 New York winegrape growers, Cornell University will test the potential of soil microbial stimulators to encourage mycorrhizae formation on vine roots, and assess whether there is a reduced need for chemical fertilizers in the vineyard and/or improved vine health.

North Carolina Department of Agriculture and Consumer Services

Amount Awarded:	\$1,092,706.50	Number of Projects:	13
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- Research conducted at North Carolina State University will define protocols for long-term storage of field-grown, perennial, specialty cut flowers, thereby allowing growers to sell these notoriously synchronous crops for extended periods after harvest. This will be done by 1) identifying longerterm storage conditions that preserve flower vase life, 2) ensuring that incidence of botrytis fungal infection is held in check throughout extended storage, and 3) developing a "heat exposure model" for estimating the remaining vase life of cut flowers following storage and shipping.
- The University of Mount Olive Lois G. Britt Agribusiness Center will prepare students and agricultural community stakeholders to produce, manage, and market horticultural specialty crops through training resulting from the development of a student farm. The project will focus on organic and sustainable practices in the production of horticultural crops, improving the management of pollinator health, and the development of local and regional food systems to increase opportunities for new and beginning farmers in specialty crop production. Through education and research students and others will be provided a platform to enhance the competitiveness of specialty crop production.

- The North Carolina Department of Agriculture & Consumer Services Plant Industry Division will eradicate the sweetpotato weevil (*Cylas formicarius*), the most destructive insect pest of sweetpotatoes in the world, from North Carolina based upon the weevil population and host survey data collected during Phase One of the project (funded by SCBGP 2014) by utilizing an array of integrated pest management techniques including pest mating disruption, biological control, and cultural practices.
- The Carolina Farm Stewardship Association (CFSA) will conduct field trials at the Elma C. Lomax Farm, in Concord, NC, in order to evaluate the efficacy of commercially available biopesticides approved for use in certified organic specialty crop production and conduct outreach and education to organic farmers on best practices for pest management, including the use of biopesticides to control pests in organic specialty crop production systems. Field trials will include an evaluation of biofungicides to control powdery mildew on cucurbits, bioherbicides to control aphids, flea beetles, and lepidoptera on brassicas, and bioherbicides to control weeds. Field trial results will be disseminated at field days and workshops, through electronic newsletters, and on CFSA's website.
- Partner with North Carolina State University to develop integrated control strategies for cucurbit anthracnose by evaluating watermelon lines for resistance, monitoring efficacy of fungicide products in cucumber, and analyzing fungicide-resistant pathogen populations affecting diverse cucurbit crops. Findings of this project will provide robust management recommendations to cucurbit growers.
- Partner with North Carolina State University to develop crop protection programs for Fusarium wilt in watermelon by evaluating new effective fungicides and analyzing the potential for development of fungicide-resistant pathogen populations. Findings of this project will provide novel disease management recommendations for Fusarium wilt to watermelon growers.
- The North Carolina Department of Agriculture will reimburse growers up to \$900.00 for certification of Good Agricultural Practices through a third party audit. The funds are to assist growers in deferring the cost and increase the number of growers who obtain on-farm safety certifications. PROJECT
- The North Carolina Department of Agriculture will reimburse growers up to \$1,000.00 for Analysis of water used in growing, harvesting or packaging for the purposes of becoming certified for Good Agricultural Practices through a third party audit and in preparation of upcoming Food Safety Modernization Act (FSMA) enforcement. The FSMA is requiring growers to develop a baseline over a 4 year period. This program will assist the growers in deferring the cost of these new rules and in maintaining on-farm safety certifications.
- The purpose of this project to support the School Nutrition Association of NC in developing educational materials that can be used by school nutrition staff to educate elementary aged students about where their food comes from and its story from the farm to their school. Blueberries will be the crop featured in this project. This grant will fund the writing and illustration of one children's book with activity guide that meets the North Carolina Common Core and Essential Standards. As students make a connection to food, their consumption of fruits and vegetables served through school nutrition programs will increase, as will be measured by sales of the selected crop through the NC Farm to School program.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The North Carolina SweetPotato Commission will work with NC Ag in the Classroom to develop classroom-ready lesson plans featuring sweet potatoes. Curriculum will be written for elementary, middle and high school students and will identify common core standards met by each lesson. In addition, an Ag Mag focused on sweet potatoes will be written and available in print and for use on a white board. This magazine will include links to videos from the sweet potato season. Posters depicting "A Year in the Life of a North Carolina Sweet Potato" and a story book and activity guide will be reprinted and made available to teachers. These materials will replace outdated lessons that have do not meet the requirements teachers need, including identification of common core standards. Once completed, they will be available on the NC SweetPotato Commission and NC Ag in the Classroom websites. They will also be submitted to National Ag in the Classroom for approval and dissemination on their website.

- The North Carolina Nursery & Landscape Association, Inc. (NCNLA) will continue to enhance the competitiveness of North Carolina-grown nursery and floriculture crops by:
 - Further developing and marketing wholesale and retail mediums developed through previously funded SCBG projects,
 - Expanding the industry's presence at national, regional and targeted state industry tradeshow to increase participant wholesale grower sales into out-of-state markets,
 - Researching and trialing inventory management, point-of-sale solutions and digital marketing tools for utilization by participant independent retail garden centers to improve business efficiency, and,
 - Establishing baseline data of sales in dollars for participant horticultural producers (wholesale) and garden centers (retail) to measure project impact.
- North Carolina State University will develop a systems-based approach to advance the production of fresh-market tomato by improving strategies for management of foliar diseases, a major industry concern. Bacterial leaf spot, early blight, and late blight of tomato are the production-limiting foliar diseases of tomato, each of which have acquired some level of fungicide resistance. Combining new fungicide products with innovative techniques or products could mitigate resistance, decrease inputs, increase yield, and enhance the overall competitiveness of the fresh-market tomato industry in NC. Outputs of this project include: (1) a better understanding of and ability to mitigate fungicide resistance development in pathogens that cause foliar diseases; (2) a thorough evaluation and update of the Fungicide Spray Program for Foliar Disease Management of Tomato in NC in order to increase efficacy of fungicides and minimize the risk of resistance; and (3) enhance production for sectors that cater to local markets by grafting scions with superior foliar disease resistance to rootstocks that confer resistance to major soilborne pathogens. Research tasks will focus on examining strains of two pathogens across NC in field and greenhouse transplant production, evaluations of alternative spray programs in multiple locations, and measuring yields of grafted tomatoes to support local, organic or sustainable farm practices. Progress, results, and updated spray programs will be communicated through extension publications, field days, grower meetings, agent trainings, the NCSU Extension Plant Pathology Portal, the Southeastern Vegetable Crop Handbook, and the North Carolina Agricultural Chemicals Manual.

North Dakota Department of Agriculture

Amount Awarded:	\$2,484,836.77	Number of Projects:	30
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- North Dakota State University will develop practical, scientifically-based canopy and crop management recommendations for grape growers to implement throughout the state. Assessing the effect of viticultural practices on fruit yield, quality, and vine cold hardiness will be critical to the establishment of economically and environmentally sustainable techniques for the region. Viticultural practices to be examined include thinning, training, crop load management, and adjusted harvest dates. Information from this project will be shared with stakeholders through grower meetings, field days, and extension publications.
- North Dakota State University will determine if the current levels of Verticillium wilt resistance in French fry potato cultivars are a practical and sustainable means to manage this disease negating the need for soil fumigation, an environmentally hazardous and economically expensive disease control option. The request is for second year funding of research originally funded in FY16.
- The North Dakota State University Carrington Research Extension Center, in collaboration with the NDSU Robert Titus Research Farm in Oakes, will conduct multi-location field trials and conduct outreach to North Dakota and Minnesota sunflower producers to improve the management of Sclerotinia head rot of confection sunflowers, a sporadic but serious disease of confection sunflowers for which no management tools are currently available. Field research conducted in 2016 identified two fungicides that conferred satisfactory control of head rot with a single application. In this project, field trials will be conducted to evaluate the efficacy and residual activity of the most effective fungicides identified in field trials in 2016 and 2017 relative to (1) application timing (bloom initiation, early bloom, and mid bloom) and (2) application method (boom-mounted nozzles versus drop nozzles). Field trials will also be established to finalize recommendations for optimizing nozzle selection (nozzle type, spray pattern, droplet size) and application pressure when applying fungicides through drop nozzles for head rot control and to finalize recommendations on the use of adjuvants to optimize fungicide performance. Field trials will be conducted in Carrington and Oakes, ND under micro-sprinkler irrigation, and disease establishment will be facilitated by inoculating sunflower heads with laboratory-produced spores of Sclerotinia sclerotiorum, the causal pathogen. The project will contribute to the development of rigorous recommendations for managing Sclerotinia head rot in confection sunflowers with fungicides. Research results will be disseminated at the National Sunflower Association Research Forum, outreach meetings, and directly to key stakeholders via phone and e-mail.

- North Dakota State University Extension specialists, faculty and staff from at least 25 counties and external partners will enhance knowledge and safe food handling of specialty fruit and vegetable crops from field to fork. This project addresses three key priorities of the North Dakota Department of Agriculture related to enhancing the competitiveness of specialty crops: 1) enhancing food safety, 2) improving the capacity of all entities in the specialty crop distribution chain to comply with FSMA, etc. and 3) increasing child and adult nutrition knowledge and consumption of specialty crops. The project will create new educational materials related to specialty fruits and vegetables grown in North Dakota targeting both youth and adults. Through the development of materials such as online modules, fact sheets, information releases, presentations, participants will increase their knowledge of specialty crop use. As a result of partnerships with NDSU and Iowa State University faculty and specialists, farmers markets and growers, the project will offer face-to-face workshops, webinars and online module-based training for growers, small food businesses, including topics such as Good Agricultural Practices, FDA acidified food regulations and topics including agricultural water, biological soil amendments, domesticated and wild animals, and worker health and hygiene. The project will increase knowledge and consumption of North Dakota specialty crops through the offering of education for children in 4-H programs and schools, including school gardens, related to North Dakota specialty crops. Knowledge gained and behavior changes will be evaluated through the use of pre/post surveys.
- Under a previous specialty crop block grant, North Dakota State University and the Williston Research and Extension Center showed that high tunnels can be used to effectively modify the environment and to greatly enhance the growth of warm season high tunnel crops such as tomatoes, peppers, and cucumbers as well as cut flowers in Williston and Absaraka, ND. In this new project, the emphasis will be on pushing the limits of season extension. Three high tunnels will be used to evaluate early-season potential of warm season vegetables when using season extension technologies and to use those same technologies to evaluate cool season vegetables during the off-season when field production is inhibited by freezing temperatures (fall/winter). With the continuation of the community of practice, we will be able to address grower questions and quickly disseminated results to stakeholders; and with grower meetings and field days we will be able to reach new and potential stakeholders.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- The Department of Plant Pathology at North Dakota State University will evaluate 60 potato cultivars and germplasm used in the region to identify potatoes with resistance to the stubby root nematode *Paratrichodorus allius* and the root-lesion nematode *Pratylenchus scribneri* that are present in potato fields in North Dakota, and develop real-time PCR assays to detect and quantify *P. scribneri* directly in DNA extracts from field soil and plant roots. Results of the proposed research will help understand resistance or susceptibility of potato cultivars and germplasm to the stubby root nematode and root-lesion nematode populations that exist in North Dakota, and improve root-lesion nematode detection and quantification efficiency in infested fields and infected plants. Sensitive and accurate nematode diagnostic methods are important to help growers preform risk assessment and make the best strategies for managing the nematode disease. The information on levels of plant resistance is important for growers to select the resistant cultivars for controlling the nematode diseases to increase potato yield and quality.
- The North Dakota State University Woody Plant Improvement Program will evaluate numerous U.S. native plants for landscape use and commercial nursery production to determine propagation methods, establishment, winter and drought hardiness, soil adaptation, pest susceptibility, aesthetic characteristics and survival in North Dakota within two different USDA hardiness zones (3b and 4a) with disseminating results to specialty crop beneficiary through website publications, presentations and field days.
- The North Dakota State University Woody Plant Improvement Program will evaluate Cornelian cherry (*Cornus mas*) cultivars for cold hardiness and best management practices resulting from developing suitable propagation methods with disseminating results to specialty crop beneficiaries through conference presentations, website publications and field days. Cornelian cherry has been shown to be an ecologically and economically important shrub or small tree in many European countries and is known for its ornamental value and fruit including flavor, nutritional, and medicinal benefits.
- North Dakota State University will develop best management practices for newly developed potato cultivars by studying nitrogen rates, nitrogen timing, spacing and irrigation as well as the effects of these treatments on post-harvest quality. The project's focus is to increase adoption of new cultivars that have superior benefits to the potato industry to maximize the sustainable production and value for potato growers in North Dakota and other potato growing states. Information will be disseminated through grower meetings, field days, storage facility tours, and publications in the Valley Potato Grower Magazine and through the NDSU Potato Extension website (www.ag.ndsu.edu/potatoextension).

- Soil Conservation Districts (SCDs) have been the main rural tree planters in North Dakota since the early 1990s. Most of the windbreak/shelterbelt plantings utilize site-specific tree species recommendations developed by the USDA Natural Resources Conservation Service (NRCS). However, each year a few plantings in most counties go outside the box, attempting to utilize new and different species that have not been sufficiently tested in North Dakota. Preliminary data from the Divide County SCD shows 10 unique species planted on 25 different sites. In Cass County, 12 unique species were planted on 46 sites. Most other counties' Conservation Districts have established similar plantings. These actions have created a 'natural experiment' that can be evaluated to complement more traditional experimental data on tree species adaptability throughout the state. A thorough evaluation of these plantings will provide SCDs, wholesale nurseries, commercial nurseries, city foresters and others with additional options for enhancing tree species diversity throughout North Dakota. The main components of this project are the initial inventory of sites, followed by dissemination of the results to multiple groups. Initially, researchers from North Dakota State University will evaluate these plantings throughout the state. Once results have been assembled, they will be presented at the annual meetings of the various partner organizations: ND Association of Soil Conservation Districts (NDASCD), ND Conservation District Employees Association (NDCDEA), ND Urban and Community Forestry Association (NDUCFA), and ND Nursery and Greenhouse Association (NDNGA). Participants will be evaluated post-program to determine the extent of their adoption of new species recommendations.
- Department of Plant Sciences at North Dakota State University will be studying the production of leafy green vegetables under controlled environment conditions. Research emphasis will be placed on identifying superior cultivars of leafy green crops for hydroponic culture, preventing such physiological disorders as leaf margin burns on lettuce, reducing tissue concentration of nitrate (NO₃-), use of artificial lights for winter production, and modification of nutrient solution and cultural systems. Outcome of this research will enhance year-round supply of fresh leafy green vegetables for local and regional consumption as well as the understanding of plant growth and development under intensive production systems.
- Metribuzin is commonly used to control broadleaf weeds and annual grasses in most potato production areas in North America (Freeman 1982). Potato cultivars differ in sensitivity to metribuzin (Arsenault, 2013). Injury results in foliar damage, smaller vine size, and reduced yield. As new cultivars are released, it is important for growers to know how the new cultivar responds to metribuzin to avoid injury and yield loss (Arsenault, 2013). Researchers of University of Idaho (UI) established a regression model [$\text{Yield Loss} = 1.142 + 0.176\{\log(\text{height of injured plants/height of uninjured plants})\} - 0.00796(\text{Foliar Injury})$], which they can use to predict yield loss due to metribuzin injury (foliar damage and plant height) without harvesting. This model can help researchers and growers evaluate a large number of potato cultivars or breeding lines in a rather short period of time, saving time, money and labor. It may also be used by growers to collect data for injury reimbursement claims (Love et al, 1993). However, the model was constructed based on the environmental conditions in southeastern Idaho. It is unknown if this model is equally applicable for the Northern Plains. This study will evaluate the UI predictive model's accuracy for the Northern Plains and make necessary corrections if needed. Moreover, we will evaluate other regression models to find the best model to predict a cultivar's response to metribuzin (yield loss) when grown in the Northern Plains.
- North Dakota State University will breed and develop new cultivars of tomato, peppers, and selected cucurbit crops including squash, pumpkin and melons. Research will focus on genetic improvement in these crops for earliness, disease resistance, and higher nutritional quality. The ultimate goal is to develop and release new cultivars of selected vegetable crops that are suited for northern climate. Success of this research will enhance local production and consumption of vegetables in the northern plains region.
- Dakota College at Bottineau will conduct a pilot project to develop Integrated Pest Management training specific to the needs of North Dakota specialty crop growers. Six small-scale vegetable growers will be trained in IPM techniques and collect pest management data on their farms for two growing seasons. Findings will be incorporated into ongoing IPM training resulting in increased knowledge and implementation of IPM and reduced pesticide use, input costs, and environmental impacts on North Dakota specialty crop farms.

- National Sunflower Association will integrate genetic and genomic approaches to determine the genetic basis of the downy mildew (DM) resistance, and identify candidate genes that can be used for sunflower improvement. Downy mildew is the most economically important disease of sunflower worldwide. The disease threatens the sustainability of the U.S. sunflower industry by severely damaging the crop, rendering it unharvestable. The use of resistant hybrids, where available, is the most efficient method of controlling downy mildew in sunflower, and marker-assisted selection (MAS) is the best strategy to deliver resistant sunflowers in the shortest time. The proposed project aims to apply genomic tools for efficient identification of DM resistance (R) genes to increase the efficiency of sunflower breeding, enhance yield and quality, and reduce chemical use. We will analyze the allelic relationship of the DM R gene P117 with a new gene P119, conduct high-resolution genetic and physical mapping of the three DM R-genes, P117, P118, and P119, identify candidate genes for DM resistance, and develop user-friendly ‘perfect’ markers suitable for marker-assisted selection. Molecular tags for the DM resistance genes will be valuable tools for more accurate selection and pyramiding of multiple resistances, and increasing selection efficiency in sunflower breeding programs. The DM resistant confection hybrids combined with superior agronomic characteristics will enhance the sustainability of sunflower production and profitability for the U.S. confection sunflower industry.
- North Dakota State University will investigate the impact of combining 1) Living mulch cover crops interseeded within cash crops, 2) Strip tillage, and 3) Organic mulches (paper slurry hydro-seeding vs. compost/mulch blankets) on small-seeded direct-seeded vegetable crop establishment, crop yield, soil macronutrients, and weed suppression. During 2018 and 2019, replicated field trials will be conducted at Absaraka, ND on organically-certified research plot land. Results from the first year will be used to select two of the most promising approaches and these approaches will be implemented on-farm near Grandin, ND as demonstration plots. Results will be disseminated to various stakeholders via field days (both University and on-farm), scientific conferences, and peer-reviewed scientific articles.
- The Carrington Research Extension Center (CREC) will investigate and plant new breeder selections of Japanese haskap and Japanese haskap crosses to replace commercial selections currently available in North Dakota and the US. The selections made in this project will produce a larger fruit crop that clings well in windy conditions. Additionally, we will use established haskap plants to study novel pollination strategies that will increase fruit production.
- *Dickeya dianthicola* (previously *Erwinia chrysanthemi*), is an aggressive, bacterial pathogen emerging in the US. Like other soft rotting species, including *Pectobacterium carotovora*, it can be found in seed potato fields, greenhouse settings, and potato storages. As a bacterial pathogen, it is difficult to detect prior to planting and prediction of disease occurrence in the field is hampered by dependence on environmental conditions. The Departments of Plant Sciences and Plant Pathology at North Dakota State University will develop procedures to screen potato varieties for resistance to the soft rot bacteria *Dickeya* spp. and *Pectobacterium* spp., and a protocol based on molecular techniques to screen potato seed lots for the presence these bacteria. Identifying and removing infected seed lots to prevent the entry of bacteria into seed, and identification of resistant varieties will mitigate the impact of these pathogens on the productivity and competitiveness of potatoes grown in ND and MN. In collaboration with the North Dakota State Seed Department Potato Program, project partners will develop a management strategy for certified seed producers to mitigate potential exposure.
- The North Dakota State University Carrington Research Extension Center, in conjunction with the NDSU Williston Research Extension Center and the NDSU Department of Plant Pathology, will conduct multi-location field trials and conduct outreach to North Dakota and Montana field pea producers to optimize the use of seed treatment fungicides to improve the management of *Fusarium* and *Aphanomyces* root rots of field peas. *Fusarium* and *Aphanomyces* root rots are serious constraints on field pea production that have caused many producers to abandon field peas on all or part of their land; new fungicide seed treatment chemistries have shown efficacy against the diseases, and this project seeks to identify when the new seed treatment fungicides are most effective and profitable. Field trials will be conducted in Carrington, ND on fields with high *Aphanomyces* root rot pressure, and another set of field trials will be conducted in Williston and Carrington, ND on fields with high *Fusarium* root rot pressure. Research results will be disseminated at outreach meetings and directly to key stakeholders via phone and e-mail.
- The North Dakota Department of Agriculture (NDDA) will help increase the access of specialty crops to schools and communities by offering competitive grants to these groups for building and maintaining orchards and gardens in their community. The NDDA will create a honey-tasting toolkit that can be used by fourth-, fifth- and sixth-grade teachers to educate their classes about the honey industry in our state and taste samples of honey that are produced from bees foraging on different crops.
- North Dakota State University will evaluate plant hardiness, landscape potential, and pollinator attraction of four genera of perennial cultivars in three locations and distribute results and recommendations to stakeholders through the North Dakota Nursery, Greenhouse, and Landscape Association, NDSU Extension garden workshops, and NDSU field days.

- North Dakota State University will help stabilize the production of winegrapes in North Dakota by incorporating temperature adaptive fall acclimation response screening at the seedling stage. This will make breeding efforts more efficient while applying the same novel quantification methods to ensure local adaptation of selected accessions and available cultivars. Temperature adaptive acclimation response has been demonstrated to be a critical trait separating regionally adapted and non-adapted cultivars of grapevine. This project will quantify these differences to inform North Dakota growers of potential cultivar limitations, as well as to inform selection decisions of the North Dakota State University Grape Germplasm Enhancement Project. The findings of this large scale screening effort will be distributed to local growers at annual meetings and field days.
- Specialty crops, such as dry beans, are particularly important to North Dakota producers at a time when the need for flexibility in crop rotations to combat disease is great, and many commodity prices are low. Bacterial blights remain among the most important diseases for North Dakota dry bean growers, and currently available management practices (using clean seed, application of foliar copper products and host resistance) are limited in effectiveness. The North Dakota State University Pulse Pathology group is conducting research in each of these disease management areas, but currently available technology is outdated, making this process extremely labor intensive. The research described here will determine race- / aggressiveness-type of the Halo Blight and Common Bacterial Blight pathogens of dry beans in North Dakota, develop a PCR (molecular-based) assay that will efficiently and effectively detect and quantify the bacterial pathogens which cause Common Bacterial Blight, Halo Blight and Brown Spot, and validate the new assay for use on leaves, pods and seeds. The outcomes will be the development of a new quantitative PCR assay for the detection and quantification of three important bacterial pathogens of dry edible beans in North Dakota, and at least 300 growers will gain knowledge of this new quantitative PCR assay via extension and outreach presentations and publications.
- The Extension and research plant pathologists at North Dakota State University will determine the importance of pea rust, proactively develop management strategies should an epidemic occur, and create a diagnostic feature and pesticide information in a mobile app designed to help growers identify and manage pea and pulse pests.
- North Dakota State University will evaluate several postemergence herbicides for crop safety and broadleaf weed control in chickpea and faba bean. This research may lead to new labels that will give farmers additional options for controlling weeds. Another goal is to determine the proper rotation interval for faba bean following the use of longer residual herbicides during the previous year. Growers need to know how long they must wait to plant faba bean after applying certain herbicides to avoid crop injury. This project will provide growers with greater knowledge and tools for growing chickpea and faba bean more efficiently and profitably.
- The North Dakota State University Carrington Research Extension Center, in collaboration with the NDSU Robert Titus Research Farm in Oakes and the NDSU Williston Research Extension Center's Nesson Valley Irrigation Research Site, will conduct field trials and conduct outreach to North Dakota and Minnesota dry bean producers to improve the management of white mold in dry beans. Seeding dry beans in narrow or intermediate rows maximizes yields in the absence of white mold and improves weed management, but growers often plant dry beans to wide rows to reduce white mold. Preliminary research conducted in Carrington and Oakes indicates that despite modest reductions in disease conferred by wide rows, pinto bean yields are maximized in narrow rows except when disease pressure is extreme (>80% severity); across 12 trials conducted over 4 years, the yield advantage conferred by narrow rows averaged 310 lbs/ac under heavy white mold pressure. Field trials will be established in Carrington, Oakes, and Nesson Valley to quantify the impact of row spacing and seeding rate on white mold, seed yield, and seed quality in pinto and kidney beans, with testing conducted under three irrigation regimes reflecting a range of strategies commonly employed by irrigated producers in the region. Research results will be disseminated at outreach meetings and directly to key stakeholders via phone and e-mail.
- North Dakota State University (NDSU) will advance project partnership with North Dakota (ND) organic growers to add value and improve health relevant bioactive profiles in vegetables using vermicomposting and bioactive elicitors. This value added innovation will not only just help organic specialty vegetable growers through improvement in sustainable production practices for better yield and quality but will also ensure higher access to fresh and healthy foods to the consumers of ND. The selection of three vegetables (tomato, green pepper, eggplant) from the Solanaceae family as specialty crops for this proposal has significant merit as these vegetables are consumed widely and has rich human health relevant phenolic bioactive profiles.

- The North Dakota Trade Office will partner with upper Midwest exporter companies, producers and producer associations to find international buyers by: 1) Conducting markets research to evaluate existing markets and to identify up and coming international markets for pulse crops. This research will be shared with the stakeholders in this project; 2) A North Dakota Pavilion at Gulf Food, in Dubai Feb 18-22, 2018, the largest annual food event serving as a gateway to new and emerging markets and increasing global exposure and sales potential of upper Midwest specialty crops. NDTO will assist up to 8 companies and associations in gaining an international buying audience through attendance at Gulf Food, increasing awareness of our companies as a reliable supplier of safe specialty crops and international sales. 3) Offering competitive grants to exporters for international focused sales trips that promote the sale and consumption of upper Midwest specialty crops. This project will enable exporters of specialty crops to attend international trade shows, or travel to markets with opportunity to meet with prospective buyers with a focus on boosting sales of specialty crops. Success will be measured by tracking the dollar value of sales resulting from the activities. 4) A reverse trade mission that includes an education component and farm tours promoting the regional pulse crops. Success will be measured by increase in sales and/or volume.
- The North Dakota State University Williston Research Extension Center will evaluate one and two year intervals in between lentil crops to determine the effect of these rotation lengths on root rot disease severity and yield in a no-till, dryland cropping system. Brassica cover crops, observed to reduce soil-borne disease severity in other systems, will be evaluated in this context to determine if this treatment could reduce root rot in lentils planted after the cover crop. Finally, a soil root rot potential seedling bioassay will be used to determine the effect of one, two and three year rotation lengths on root rot inoculum in the soil and these data will be correlated with yield and field root rot severity. This effort will improve root rot management and help generate more specific rotation recommendations for lentils grown in North Dakota.

Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources

Amount Awarded:	\$203,629.08	Number of Projects:	4
<ul style="list-style-type: none"> • The Northern Mariana's Department of Agriculture will collaborate with the Public School System in working with the grades schools and middle classes students for the creation and use of school garden. Students will continue to dirty their hands learning conventional agriculture assisted by our staff while class room instructions will continue with their science instructors. We will continue to conduct outreach programs with PSS on both Rota and Tinian. • The hoophouse garden project will implements a partnership with the public school system with primary focus on the young children and middle class graders. This program will be extended to other stakeholders interested in the program. The hoophouse garden project is designed to meet household needs as well as for hands on training and experience for students. Resources on planting materials and educational means will be provided by the division of agriculture and its coordinator for this program. • At present, there is no reliable agricultural data available for farmers, agricultural planners, investors, etc. for planning and investment purposes. It is apparent that a need to establish even a rudimentary data base on agriculture plants and produces must be done. This project proposes to accomplish just that by working with the various government institutions in the CNMI to collect needed data from farmers and producers through their nutrition services programs. Simultaneously, this project opens outlets for farmers and producers to market their specialty crops, residue free, for human consumption. • Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding. 			

Ohio Department of Agriculture

Amount Awarded:	\$577,359.11	Number of Projects:	8
<ul style="list-style-type: none"> • The MORE Ohio Pawpaw project, led by Brad Bergefurd and Matt Davies at Ohio State University, will investigate methods to improve the efficiency of pawpaw field production and food safety. The project will also complete vital market research in 6 order to capture dollars and jobs that are currently being sent out of state by Ohio's produce marketing industry. The end result will be the creation of an Ohio pawpaw production, marketing and plant nursery industry. • The Foodbank, Inc. (Dayton, Ohio) will work with underserved youth to plant, harvest, and sell herbs for distribution to the hungry and local purchasing consumers. Revenue from sales will be used to hire local underserved youth for summer employment in the garden. 			

- The Ohio State University will develop prevention, control and intervention strategies for hydroponic leafy greens. Researchers from the Departments of Plant Pathology and Human Sciences, Human Nutrition, Wooster and Columbus, will lead this project. Project partners will establish die-off rate metrics for water contamination in regular and flooding conditions, and protocols for four different water treatments.
- The Maumee Valley Growers Association (MVGA) will develop its wholesale, virtual food hub division by creating a sustainable operation within two years by connecting small farmers to consumers interested in purchasing locally grown produce throughout the state of Ohio. The hub is currently completing its second year of operation.
- The Center for Innovative Food Technology (CIFT) will expand its blanching and freezing operation footprint to commercial scale production by aggressively marketing and launching the program to growers, schools, universities, hospitals and institutional buyers. The operation, which processes specialty crops from Ohio farms and freezes it for sale during winter months, has been beneficial for growers, and by expanding the facility, the outcomes will 1) increase 38 local specialty crop grower incomes 2) grow the consumption of locally grown and processed food in northwest Ohio, 3) identify opportunities to supply local produce to more buyers across the state and 4) extend the marketing season for locally grown produce.
- Our Harvest Cooperative (OHC) will increase the competitiveness and profitability of the specialty crop industry in SW Ohio by increasing the number of year-round household buyers of specialty crops; increasing food hub partnerships with specialty crop growers; and conducting a specialty crop marketing campaign. The result of this work will be increased sales of specialty crops, which will lead to increased profitability for specialty crop growers and an increased number of specialty crop jobs.
- The Ohio State University South Centers will help fruit growers extend harvest season, expand their acreage, and increase farm diversification by testing new bramble (blackberry and raspberry) cultivars, the best bramble production systems, and selected exotic fruit species (such as hardy figs and hardy kiwis), and disseminating research results to stakeholders through social media, growers meetings, field days/nights, and development of educational materials.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Oklahoma Department of Agriculture, Food, and Forestry

Amount Awarded:	\$529,295.46	Number of Projects:	12
<ul style="list-style-type: none"> • Oklahoma State University researchers in the Dept. of Horticulture and LA will develop new turf-type bermudagrasses having improved shade tolerance through traditional plant breeding and recurrent selection methods. Potentially shade tolerant African bermudagrass plants will be selected after two years under heavy shade. These plants will be used for interspecific hybrid crosses and continued selection for enhanced shade tolerance. The ultimate outcome of this project will be the eventual release of a new cultivar for sod production. • Oklahoma Cooperative Extension will develop cucurbit crop production scheduling methods and techniques that integrate insect pest and pollinator management, information that will be disseminated to the public through field demonstrations, grower outreach events and through County Extension Centers. • Oklahoma State University will examine the potential for direct seeding for establishing commercial pepper crops for the state of Oklahoma and improving weed management strategies for this crop group. This will include investigations into seeding rates and timing for both non-pungent and pungent peppers, soil improvements through cover cropping, and managing weedy species that compete with these crops. Results of the studies will be shared with farmers at field days, through publication in the university's annual Vegetable Trial Report, and through presentations at state-wide grower's conferences. • The Oklahoma Agritourism program will undertake a project to help producers educate consumers about proper u-pick practices, food safety and handling, nutritional value and value-added possibilities of specialty crops. These goals will be accomplished by adding web content to the program's existing site and social media components that include picking tips, handling and storing guidelines, nutrition facts and recipes. This project will also provide producers with tools to inform consumers about the existence of the web content. • Oklahoma Ag in the Classroom will create a "Specialty Cropopoly Junior Board Game" for students in prekindergarten-third grade to educate them about specialty crops grown in Oklahoma (fruits, vegetables, and pecans) and the nutritional benefits to eating these foods. 			

- The Samuel Roberts Noble Foundation will conduct research on pecan trees to gain a better understanding of root development. We will examine different strategies of modifying pecan tree root system development to improve tree growth and performance. Pecans are the largest specialty crop in Oklahoma with over 104,000 acres (USDA census, 2012) being reported. Oklahoma annual production of pecans rates in the top 5 nationally. However, over the past 10 years there has been a lot of interest in planting pecans; in fact Oklahoma is one of the top three states in total acreages of new pecan trees being planted each year. With the interest in planting new trees and the cost of investment establishing pecan trees there is a desire to improve the growth and performance of young trees to increase early production. Therefore, decreasing the number of years it takes to pay off the investment of establishment. Research has been conducted to look at different methods of planting trees and pruning methods that can increase tree growth, along with fertilization and irrigation regimens. However, the evaluation of the root systems of pecan trees are very limited and little is known about root development and methods to modify root systems of pecan trees to increase performance. This grant proposal is the start of a number of research studies that will be conducted to gain a better understanding of pecan tree root development.
- The Kerr Center for Sustainable Agriculture will evaluate Elderberries as a potential crop for Oklahoma producers. Elderberries are a native, perennial specialty crop with great potential in Oklahoma. Most of the elderberry market demand in the United States is met with European produced fruit. There is a need additional small fruit crops among small scale and new farmers who currently rely on annual vegetable crops. We will evaluate a number of different Elderberry varieties to determine yields, survivability, ease of management as well as potential market economics. Investigations and demonstrations will be conducted at the Kerr Center's Cannon Horticulture Farm. Education will be accomplished through field days, tours, conference presentations, articles and a publication.
- Research at Oklahoma State University will look at alternative use of greenhouse space to produce high value fruits, vegetables, herbs, and cut flowers using hydroponic technology and match these systems to appropriate postharvest handling technologies to support local market production. As interest in local year round fresh market crops continues to increase, other alternative crops need to be investigated and improved upon to allow growers to diversify and expand into new markets. Hydroponics improves yields and nutritional quality with less inputs compared to field production and growing in the greenhouse allows growers to avoid

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Oklahoma's unpredictable weather. This research will evaluate at least two cultivars of 10 different fruits, vegetables, herbs, or cut flower crops including blackberries, blueberries, strawberries, raspberry, celery, lettuce, collards, cilantro, oregano, and ornamental grass. For commonly grown crops, objective testing procedures will be established to determine quality characteristics. Lastly, a conference will be held to unite new and current growers to address to show case current production or research areas in soilless crop production. Outcomes include providing information on managing water and nutrients, production cycles, yield, and quality assessment information will be provided to stakeholders through factsheets, journal publication, and a conference on soilless production systems. Tasks to be completed include setting up Dutch bucket, nutrient film technique, and vertical grow tower hydroponic systems, starting seedling nurseries, growing plants, data collection on yield parameters, scheduling a conference, establishing quality assessment protocol, and disseminating results.

- Oklahoma State University will evaluate and select improved experimental bermudagrass (*Cynodon* spp.) genotypes for adaptability for golf course putting greens and specialty sod production in Oklahoma. There are over 200 golf courses in Oklahoma and the majority of these courses utilize creeping bentgrass (*Agrostis stolonifera*) for putting greens. Recently, many of these courses have considered switching to bermudagrass putting surfaces. However, Oklahoma's climate frequently experiences freezing winter temperatures which cause devastating winter kill of commercially available bermudagrass putting greens. Therefore, we plan to produce a bermudagrass that will withstand freezing temperatures in Oklahoma. The bermudagrass genotype must be an excellent sod producer and sprig producer so that Oklahoma sod growers can be profitable. In this project, we plan to evaluate sod quality and sprig harvest characteristics of these genotypes to determine which selection will perform the best for Oklahoma specialty sod and sprig producers. We also plan to evaluate the aesthetic quality parameters and utility ratings at demonstration sites on golf courses across Oklahoma, under intensive golf course putting green management practices. The results of this work will be disseminated through the Oklahoma Cooperative Extension Service and by making direct contact

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with Oklahoma sod producers and industry professionals. We have put several years of previous research into this effort and if this project is funded, we plan to collect data that enable us to release one improved bermudagrass genotype that would be available to any Oklahoma sod producer interested in commercializing this product.

- Oklahoma State University will conduct research to mitigate the spreading of viruses infecting roses by developing a method that combines Next Generation Sequencing and bioinformatics for screening all viruses infecting roses at once in a single rose sample. This technology is required for implementing virus-free propagation of roses from virus-free plant stocks. Communication and transferring of results to rose-ornamentals nursery stakeholders will be through workshops and plant diagnostic clinics. The validation, development and implementation of this technology will make the rose industry more competitive by offering long lasting rose products currently affected by mix infections of rose viruses. Recent epidemics of Rose rosette virus and other mix infecting viruses had seriously affected the gardening and landscape of Tulsa and Oklahoma City and significantly decreased the quality and sales of roses in detriment of the rose industry.
- The University of Oklahoma Health Sciences Center on behalf of the Oklahoma Nutrition Information and Education Project (ONIE) will organize, implement, and evaluate an annual Oklahoma Farmers' Market Conference in 2018. The conference will provide education and outreach opportunities to specialty crop growers, farmers' market managers, community supporters, and Agritourism sites from across the state. The conference will offer presentations on a variety of topics including marketing and social media, accepting SNAP and Senior Farmers' Market Nutrition Program (SFMNP) benefits, growing season planning, how to establish or expand a farmers' market, comply with health regulations, build stronger collaborative networks among specialty crop producers, and improve local economies. The conference will offer a comprehensive approach to the marketing of specialty crops. Each conference topic directly supports the enhancement of the retail sale of specialty crops in Oklahoma. Overall, the conference will improve specialty crop retail sales, expand the number and quality of access points to purchase specialty crops, and improve the local economy throughout the state.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Oregon

Amount Awarded:	\$1,739,496.57	Number of Projects:	15
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- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Oregon Agriculture in the Classroom Foundation will collaborate with producers, processors and agricultural businesses to inspire the next-generation of the specialty crop work force. This project will focus on creating opportunities for Oregon high school students to become more aware of career opportunities in agriculture by hosting a career exposition, development and promotion of classroom curriculum and the creation of promotional resources featuring careers in Oregon's specialty crop industry.
- The Oregon Farm to School and School Garden Network (OFSSGN) will increase purchases of Oregon-grown fruits and vegetables by Oregon schools (PreK-12) and will increase promotion of these crops to students by 1) establishing Regional Farm to School Hubs, which will support stakeholders in their regions, 2) focusing on one or two crops in each region for promotion and to address distribution/access barriers, 3) identifying fruit and vegetable producers in each region to serve as models/support people for their peers in the region, and 4) expanding farm to school efforts to include summer lunch programs.
- Oregon State University Food Innovation Center research team will develop a smartphone/mobile device based mobile solution APP and a cloud based food recall information system to facilitate effective food recall for small NW specialty crop food processors by collaborating with OSU Department of Computer and Electrical Engineering, Northwest Food Processors Association (NWFPA) and the NW small specialty crops food processors.
- Oregon Aglink, a 501(c) 6 non-profit, represents Oregon's agricultural community via outreach programs to Oregon's urban citizens.

The Adopt a Farmer program connects a middle-school science program with a local farm operation for an entire academic year through field trips and multiple classroom appearances/activities. Participation in the program helps to foster a better understanding of how Oregon's specialty crops are produced and the important role that science has in accomplishing that goal in terms of food production and environmental practices.

Farm to school educational activities seek to embed food and agricultural education within the school day in all subject matters, and especially STEM programs. Very few target middle school aged students specifically, and none have systematic and sustained farmer and specialty crop specialists interacting both in the classroom and on the farm. This project fills these gaps. Adopt a Farmer showcases career opportunities within agriculture that supports the specialty crop farmer. This includes, but is not limited to, food processors, agronomists, engineers and bankers.

Through the Adopt a Farmer program students experience Oregon's specialty crop industry, as it really is, a constantly changing industry where farmers work with a support system to provide the world's food while preserving natural resources.

- Oregon Tilth will help Oregon's next-generation organic and sustainable mixed-vegetable farmers conduct cost studies to determine their production costs and adopt strategies for increased profitability; and we will generate production cost benchmarks to help organic and sustainable mixed-vegetable farmers with financial projections, business planning, and accessing capital.
- The Northwest Berry Foundation (NBF) will develop resources enabling Oregon berry producers to recover economic value from surplus product through linkages to food recovery and distribution networks supporting berry producers by: 1) Gaining maximum economic benefit from the product; 2) Creating positive market benefits through increased community interactions and media coverage; 3) Reducing the amount of surplus shelf-stable product going into long term storage. 4) Increasing local consumption of berries and berry products.
- In Culturally Specific - Community Chefs Sharing Food Traditions and Nourishing Community, project lead Zenger Farm will increase public awareness of Oregon specialty crops in an array of recipes developed and produced by eight SE Portland community members trained to teach community cooking education. Oaxacan, El Salvadorian, Mexican, Bhutanese, and Chinese community members receive stipends to teach cooking workshops, and demonstrations at the Lents International Farmers Market, community partner locations, and Zenger Farm while sharing their knowledge of Oregon specialty crops. Recipes will reach statewide audiences via a digital outreach campaign lead by KUNP and supported by Partners for Hungry Free Oregon, Oregon Food System Network, and Bob's Red Mill. Through this programming Zenger Farm will help all participants understand Oregon specialty crops and how to use them.
- The Northwest Food Processors Association is home to an extensive specialty crop processor (fruit, nut, vegetable, potato) and equipment and facilities infrastructure supplier member base, which comes together annually at the NWFPFA Food and Beverage World, North America's largest regional gathering of food processors. Many of the equipment and facility infrastructure suppliers are integral partners to the food safety interests of specialty crop processors through the products and services that impact the effectiveness and efficiency of sanitation in the food plant. The sanitary design of equipment and facilities is the underpinning to food processing sanitation programs. Without good sanitary design, processors find it difficult to impossible to clean their facilities and equipment sufficiently for protection of the food supply and compliance with the Food Safety and Modernization Act (FSMA).
- The Oregon Wine Board, which represents all Oregon winegrowers and wine producers, will expand the awareness, penetration and sales of Oregon wine in four high-potential domestic markets. The project will include the development and execution of events in each of these markets. A component of these events will be an educational master-level seminar for influential members of the trade to deepen their knowledge of the most important topics in Oregon wine. The events will also comprise tasting events: a trade and media tasting that is free for wine professionals and members of the press to attend; and a paid consumer tasting to help develop consumer evangelists in these markets. The events will represent the full gamut of winegrowing in Oregon, ensuring diverse representation of varieties and producers around the state. The outcomes will be increased distribution and sales in these markets.
- The Oregon Strawberry Commission (OSC) will support Oregon fresh market strawberry growers by developing consumer and trade communication campaigns which highlight new fresh market strawberry varieties, the expanded fresh market season and the story of the Oregon growing environment. These new communication campaigns, executed in April, June, August and October of 2018 will achieve the following outcomes: generate consumer awareness and drive sales of new, fresh market Oregon strawberry varieties, better connect farmers of these new varieties and their Oregon strawberry story to consumers, and provide support materials for growers to market their fresh strawberry crops to their customers. These campaigns will directly support the industry shift to fresh market varieties that has already started in Oregon.
- The foodborne pathogen *Listeria monocytogenes* (Lm) continues to be a recurring and complex issue in the production of various foods despite a decade of intervention and research. A large body of data on Lm prevalence in ready-to-eat (RTE) food processing facilities exists; however, less is known about Lm in produce packinghouses, holding/distribution, and fresh-cut facilities. As soil is a natural habitat for Lm, the presence of these microorganisms in environments where produce is grown and handled is common. Understanding where contamination comes from, and effective ways to reduce cross-contamination between the environment and food is critical to public health. Such knowledge is required to establish effective monitoring and verification programs to support produce industry compliance with the Food Safety Modernization Act (FSMA). Oregon State University proposes a project that will address three current knowledge gaps: (i) *Listeria* spp. prevalence and sources in produce packinghouses, distribution, and processing facilities in the Pacific Northwest (PNW); (ii) the Lm harborage sites in produce handling environments and practices that may lead to cross-contamination; and (iii) design of an effective environmental monitoring program to implement a seek-and-destroy approach for *Listeria* spp. Study findings will include recommendations for growers and processors to identify contamination sources, conduct environmental monitoring, and establish preventive controls for cross-contamination risk reduction for Lm control in produce production. An outreach component will include engagement with key industry and regulatory stakeholders and sharing best practices through hands-on trainings, presentations, and report to partners.

- Winegrapes are the most valuable specialty crop in Oregon, and are produced throughout the state. Grapevine red blotch disease (GRBD), caused by Grapevine red blotch-associated virus (GRBaV), is an emerging problem for all winegrape producing regions in Oregon. Its effect on fruit and wine quality has been reported to reduce profit margins for both growers and wineries, and thus affects whole-industry sustainability. The three-cornered alfalfa treehopper (*Spissistilus festinus*) is a known vector of this virus. Other treehoppers found in Oregon vineyards are potential vectors. This two-year project proposal aims to bridge knowledge gaps and develop new tools required to manage GRBaV in Oregon vineyards. Project objectives include: (1) determine GRBaV distribution and incidence, (2) determine presence and significance of *S. festinus* and other treehoppers, (3) develop cultural practices to mitigate the negative effects of GRBaV on fruit and wine quality, (4) develop sustainable management strategies for the virus and its vectors, and (5) disseminate information developed in this project to stakeholders (growers, nurseries, wineries, and state regulatory agencies) through a collaborative extension program that will be advised by a stakeholder panel drawn from throughout the state. The research and extension activities will be conducted by a multidisciplinary team of 10 investigators across all major wine producing regions of Oregon that include pathologists, entomologists, horticulturists, enologists, analytical chemists, and extension specialists.
- Oregon State University will take the lead in developing educational material for food safety practices targeting the agricultural workforce of Oregon's berry industry. With the implementation of the Food Safety Modernization Act (FSMA) Produce Safety Rule (which include standards for the growing, harvesting, packing, and holding of produce for human consumption), training in good agricultural practices and food safety awareness is going to be a continuous demand. Considering that approximately 81% (U.S. Department of Labor, National Agricultural workers survey, 2010) of the agricultural workforce primarily speaks Spanish, there is a need to develop resources to help this diverse audience, especially with material that is relevant to Oregon's production. This project will provide resources to growers, farm owners, and managers to provide continuous education in food safety practices and to increase understanding of the standards for growing, harvest and handling of fresh produce included in the Produce Safety Rule. In order to develop the most effective material, we plan to offer a total of eight Produce Safety Alliance Grower trainings at different production areas in and around the Willamette Valley during the time of the project. Each workshop day will feature a full day of English only, followed by a full day of Spanish only instruction.
- The Oregon State University will develop and validate effective and competitive edible coatings as a part of postharvest handling and storage strategies to enhance shelf-life and marketability of fresh pears. Specifically, the developed coatings will effectively control peel browning of pears as the result of scuffing and scalding, and reduce water loss to prevent shriveling and decay of fruit during long-term cold storage and short-term ambient storage. It is anticipated that the developed coatings will provide additional benefit for lubricating the fruit on line. Columbia Gorge Fruit Grower Commission and Oregon and Washington pear producers and packers will be actively engaging in this project by serving as advisory committee members, helping validate the coatings in their packing facility and storage warehouse, and participating in trainings for adoption of developed coating technique. This project will help increase sale of Oregon and Washington fresh pears by enhancing quality and extending shelf-life (i.e., extended marketing time), improve transportation and storage efficiency, and reduce loss of fresh pears. The developed coating technique is not limited to pears, and can be applied on other tree and stone fruit, such as apples and cherries.

Pennsylvania Department of Agriculture

Amount Awarded:	\$969,496.25	Number of Projects:	17
<ul style="list-style-type: none"> • The Pennsylvania Department of Agriculture-Bureau of Food Safety and Laboratory Services will provide free outreaches to Specialty Crop Farmers in the form of Mock USDA GAP/GHP Audits and information on FDA FSMA Produce Rule to increase the food safety practices used on farms • Rodale Institute (Kutztown, PA) will undergo a research project to specifically measure the effectiveness of a hairy vetch cover crop for suppression of powdery mildew and downy mildew in butternut squash production in tilled and no-till systems and using a conventional and organic fungicide program to determine the benefits of hairy vetch in an integrated approach. • The Food Trust, in partnership with Penn State Extension, will strengthen farm to school food systems through farmer outreach and education, field days for specialty crop growers and food service directors, and through the facilitation of new farm to school business relationships. • Miner's Mill will increase the amount of producers growing specialty tree crops (nuts, fruits, maple, and Christmas trees) by investigating methods to grow trees in coal mine spoils, recording growth and survival data, and distributing this information to owners of coal mine lands, farmers, and on the internet. 			

- Pennsylvania Department of Agriculture oversight
- The American Mushroom Institute (AMI) will establish a project to identify key pest management challenges, determine educational and training opportunities, and develop workshops for growers and community residents to disseminate updated research findings and pest management strategies. AMI will collaborate with Penn State University to develop and administer a survey, compile the survey data, and plan and conduct training workshops in the areas which are deemed to be emerging issues.
- Rodale Institute will evaluate cultural and biological tactics for managing allium leafminer and improving soil health for organic onion production by developing scientifically-based viable options and disseminating results to stakeholders at growers' conferences and educational venues
- Strategic Contracting, Inc. will plan and coordinate the 2018 PA Preferred Culinary Connection, which delivers immediate benefits to the specialty crops organizations and the local economy in the form of increased sales and marketability of PA commercially-grown specialty crops by allowing local farmers and food suppliers to showcase their specialty crops to local consumers.
- Promoting Pennsylvania Produce to Pennsylvania Hospitals is a project of Health Care Without Harm (HCWH) in partnership with the South-Central Pennsylvania Harvest Hub (SCPHH). The project seeks to support PA-based produce growers by increasing their access to the institutional market. The project will increase procurement of PA produce by hospital food service operations and will increase market access for producers by reducing barriers to distribution.
- Pennsylvania Wines (PA Wines), led by the Pennsylvania Winery Association (PWA), will lead a strategic and comprehensive content marketing campaign that builds on the positive momentum of previous and current Specialty Crop Block Grants of 2015 and 2016. This campaign – entitled Made in PA Wine Land – will generate increased product interest from wine consumers and grape growers across Pennsylvania and from surrounding states.
With recent changes to the PA Liquor Code (Act 39), the opportunities for consumer access to PA wines have expanded significantly. It is timely to promote locally made wines and their expanded availability and unique characteristics. Presently, PA Wines is at work on the introduction of “The PA Wine Land Post”, our one-of-a-kind Pennsylvania Wines publishing platform pursuant to our 2016 Specialty Crop Grant Block Grant program. “The PA Wine Land Post” will launch with the NEW PennsylvaniaWine.com this spring and will serve as an insightful and engaging content marketing channel for PA grapes, wines, and agri-tourism promotions. The platform plays a major role in our future marketing plans for years to come. The content of “The PWA Wine Land Post” will appear on the website and be used as content for social media efforts and background information for traditional media.
Our purpose with this new Crop Grant is to enhance “The PA Wine Land Post” and related content marketing in 2018. The expansion of content and marketing material through “The PA Wine Land Post” plus additional promotional opportunities would seize on the need for more information on PA wines to inform consumers about local wines versus wines from other locations.
- This project assembles an interdisciplinary team (i.e., a food/natural products chemist, an ethnobotanist/agroforester, and a forest products economist) at the Pennsylvania State University to conduct a multifaceted study of an emerging specialty agroforestry crop in Pennsylvania---ramps or wild leek (*Allium tricoccum*). For the past decade, ramps have continued to grow in popularity as a wild food delicacy and seasonal food item. Despite the growth in popularity, there has been very little research conducted on key aspects of this specialty crop including trade volumes, market preferences and pricing, buyer/consumer predilections, and the basic chemical and nutritional composition of this niche food item. We propose a baseline study to examine all of these aspects of ramps as a specialty crop in

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Pennsylvania, and to identify further areas for future research and extension. Over the long term, the project should benefit current and potential ramp producers in the Commonwealth by providing information on optimum growth conditions and harvest times to maximize yield and quality of ramp crops, and provide insight into the potential for market growth and answers to key economic questions related to ramp production and sales. It will also benefit conservation of this wild species in the state by generating management and production guidelines that can be used by Pennsylvanians to transition from purely wild sources to more intensively stewarded and cultivated ones.

- The Pennsylvania Vegetable Marketing and Research Program (Program), in cooperation with the Pennsylvania Vegetable Growers Association (Association), will provide additional educational opportunities for Pennsylvania vegetable growers by video recording selected presentations at the 2018 Mid-Atlantic Fruit and Vegetable Convention. These videos will be posted on the Association's grower INDIRECT

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website at www.pvga.org. In addition, the Program will produce a series of consumer educational videos that will be posted on the Program's consumer website at www.paveggies.org. These videos will cover such consumer interest topics as "How Sweet Corn is Grown in Pennsylvania," "How Seedless Watermelons are Grown," "The Use of High Tunnels for Vegetable Production" and other similar topics designed to familiarize consumers with local vegetable production methods and thus highlight the availability of local vegetable crops. The project will also involve restructuring and enhancing the Program's website as well as producing new supplies of point-of-purchase materials for Pennsylvania growers who retail their vegetables.

- The Pennsylvania Association for Sustainable Agriculture will develop financial benchmarks that will help Pennsylvania specialty crop farmers navigate direct market opportunities. Direct market sales through farmer's markets, community supported agriculture (CSA) enterprises, and local cooperatives are an \$86 million industry in Pennsylvania, yet very little information is available to help specialty crop

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farmers engaged in direct market models make successful business decisions. Through this project, we will recruit specialty crop farmers to complete a detailed survey of their farm's financials. We will generate key financial benchmarks including the mean and variation in net profits, gross margins, and returns on asset base. This information will be distributed to a wide audience of specialty crop farmers through field days, conference workshops, webinars, and a fact sheet that will empower growers to better understand the direct market sector and make better business decisions moving forward. We expect that at least 12 farmers participating in the two-year survey will show short-term increases in return and that more than 250 farmers will engage with project resources to adapt their business plans for a more profitable future.

- Penn State and the Pennsylvania Department of Agriculture (PDA) will work cooperatively to generate data and tools needed for accurate and rapid diagnosis of exotic invasive pathogens and deploy resulting resources to protect the production and markets of diverse nursery and floriculture crops. This SCBG funding is crucial for maintaining this long-term partnership. Specific objectives: a) analyze and catalog the diversity of Phytophthora pathogens that have been isolated from diverse specialty crops in

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PA since 1986; b) develop or improve identification and molecular diagnostic tools for pathogenic Phytophthora species, as well as other pathogens of emerging concern, to guide rapid regulatory action and ensure safe trade; and c) deploy resulting insights and tools to protect specialty crop production and markets from major diseases. Anticipated outcomes: Data and tools from this project will help protect production and markets of diverse specialty crops in the following ways: a) improved diagnostic tools will facilitate early detection and control of major diseases, thus helping reduce crop production losses and costs; and b) enhanced understanding of the temporal and spatial diversity and distribution pattern of pathogens will guide effective monitoring, which will help recognize emerging threats early, guide effective responses, and identify likely pathogen pathways. Primary beneficiaries: Pennsylvania's nursery and floriculture industries and individual growers. Given that most of the targeted pathogens are global problems, many others outside of Pennsylvania may also benefit from this project.

- The Nurture Nature Center's Buy Fresh Buy Local of the Greater Lehigh Valley program will work with local farmers, wholesale buyers and distributors in the Greater Lehigh Valley (Pennsylvania) to develop recommendations for collective growing and purchasing among specialty crop growers. Recommendations will be established using information gathered from questionnaires, surveys, interviews and workshops, as well as visits to established cooperatives, to assess potential structures and challenges. This project will also work to establish commitments among wholesale buyers to source from

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a future growers' collective. The goal of this project is to create a plan that will allow specialty crop growers to be competitive in the wholesale marketplace.

- Pennsylvania Co-Operative Potato Growers, Inc. will work with Penn State University and Pennsylvania potato growers, packers, and processors to identify russet potato varieties that will be productive under Pennsylvania growing conditions. Today, russet potato varieties account for nearly 60% of fresh potato sales and almost 100% French fry sales nationally. Most russet potato varieties were developed from breeding programs in northwestern states such as Idaho. However, Pennsylvania's environmental conditions, soil conditions and cultural practices are different from that of the northwestern states, therefore it has been difficult to grow high quality russet potatoes in Pennsylvania. Most russet potatoes in Pennsylvania's markets are being shipped here from western states. Recently, new russet varieties were released from several potato breeding programs that are reported to have some drought and heat tolerance. Many of these new russet varieties have not been tested in Pennsylvania.

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We will collect and evaluate as many as 200 russet potato varieties from the U.S. and Canada and grow and evaluate each variety at three different Pennsylvania locations. By the end of the first year we will identify approximately 5 to 10 of the best performing russet varieties to evaluate in future trials for Pennsylvania potato growers and industry. Results will be shared with stakeholders and potato growers at grower meetings and potato field days. All Pennsylvania potato growers and industry will benefit from this project.

- The Pennsylvania State University will create a novel market niche for PA preferred petite sweetpotatoes (SP) aimed at local specialty crop growers by developing and adapting scientifically-based production methods required for making petite sweetpotatoes a new, viable and profitable PA food commodity. Through this initiative, vegetable growers can be more profitable through the implementation of "ready-to-prepare-and-eat" mixed petite sweetpotato varieties. Overall results will be disseminated through a comprehensive extension plan at local grower meetings, regional conferences, extension articles, Mid-Atlantic Commercial Vegetable Production Recommendations guide and the development of an enterprise budget to assess project viability for individual farmers. Furthermore, this project will formulate recommendations for producing other specialty sweetpotatoes as well as petite sweetpotatoes. The potential impact of this project will benefit over 600 commercial vegetable growers, both seasoned and beginner farmers in SP production in PA and the NE involved in specialty crops.

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Specifically, petite SP can represent an increase in farm income, novel entrepreneurial partnerships and successful direct-to-consumer markets.

Departamento de Agricultura de Puerto Rico

Amount Awarded:	\$451,560.37	Number of Projects:	11
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- Plantain cultivation is one of the most important food sources in Puerto Rico. FIDA and the Department of Agriculture identified the lack of plantain seed throughout the agricultural regions. Therefore, the government established a public policy to provide high-quality, disease-free plantain seeds to innovative farmers within the farinaceous sector and to provide trainings on cultivation to these farmers. It is expected that an increase in production will be obtained, as well as in the quality of the fruit. The impact of the initiative will be evident in all agricultural regions of Puerto Rico.
- The Innovation Fund for Agricultural Development will implement a series of workshops and training to promote good agricultural practices as well as establishing institutional Farmer's Markets throughout the central mountainous area. These strategies are focused in recurring the establishment of local Specialty Crop farmer shops for direct sales.
- In the search for new Specialty Crop productions in the island of Puerto Rico, this project overlooks the investigative process of establishing higher commercial production of the Arracacia xanthorrhiza, fruits and other vegetables.
- The Puerto Rico Department of Agriculture seeks to impact at least 20 farmers from the farm region of Mayagüez and bordering towns that are willing to establish plantings of breadfruits. The initiative will require the compulsory participation of farmers in the training programs, field days on the practices of intensive cultivation for the breadfruit, seminars on data collection and information on the grounds of the initiative. The farm will serve as a model farm for the first three years of the initiative for other farmers who are interested in cultivation.
- The JMAM Gourmet Cacao Project will be divided in phases and for the purpose of this proposal will develop the first phase that consist in the capacity building program that will provide a certification for the farmers and the land regarding the scientific selected gourmet cacao and the accomplishment of the agricultural organic procedures standards established in the program. This capacity building will educate farmers and establish efforts that will increase, assure the quality and the consistent supply of gourmet cacao to be sold to potential customers.

- The role of Hacienda Gosen is to lead, motivate and provide the example to other farmers of the benefits of this intercrop project. Hacienda Gosen will impact farmers through direct invitation to participate to disseminate techniques to more than 200 farmers within the region on the benefits of the Breadfruit/Cacao. The descriptions of the different training seminar topics are included in the project proposal.
- Sweetwater Vertical Farm, LLC (SVF) will create the first Hydroponic Vertical Farming Educational Center (HV FEC) in Puerto Rico (PR) to demonstrate the viability of organic specialty crops production, from A-Z, including full substitution of soil for a combination of coconut fiber and parboiled rice hulls while saving 90% of water consumption, substantially reducing energy usage (going off the grid with a small solar panel), and helping the student or farmer understand not only installing the Verti-gro technology, but also planting, harvesting, picking, packaging, labeling, marketing, and sales of such specialty crop
- The Center of Microenterprises and Sustainable Agricultural Technologies of Yauco Inc. (CMTAS) will solicit the participation of at least 30 new and/or existing farmers to provide them with the necessary tools in cultures specializing in herbs, spices, vegetables and medicinal herbs in hydroponic systems. CMTAS will impact actual and potential farmers of the area and will carry out educational workshops both theoretical and practical (Hands on Training), design and construct roof shades, and will cultivate, harvest and market specialty hydroponic crops.
- Finca La Vecindad, Inc. located at Barranquitas, Puerto Rico is developing farm workshops using cartoon themed and “hands-on” activities to promote the consumption and awareness of Specialty Crops in children as well as adults in collaboration with the La Vecindad del Chavo Restaurant.
- Finca Agroecológica Tierra Nueva Corp. seeks to demonstrate that growing passion fruit organically in Puerto Rico is economically viable for local farmers under sustainable practices. Our proposal addresses the funding priorities of: (1) Improve the competitiveness of specialized crops through the implementation of sustainable practices, and (2) improving production practices through the investigation of commercial selected varieties cultivars. As a result of this project we will have an economically viable option for sustainable passion fruit management.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Rhode Island Division of Agriculture

Amount Awarded:	\$233,250.69	Number of Projects:	5
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- HARVESTING RHODE ISLAND is a television series with RI/PBS about farms in RI where farmers discuss the products they grow.
- Farm Fresh Rhode Island will build a culture of local specialty crop awareness and acceptance at Rhode Island public schools, by providing technical assistance, culinary training and nutrition education to the wide range of stakeholders in students’ lives.
- The Northeast Organic Farming Association of Rhode Island (NOFA/RI) will lead and administer this project. The Board of NOFA/RI Board of Directors will direct the project pursuits and review program operations through appropriate committees. NOFA/RI requests \$30,670 in program funds under the 2018 Specialty Crop Block Grant program to improve the competitiveness of organic livestock and crops and organic farmer profitability by enhancing farming practices through targeted technical training, innovation sharing and business skills-building workshops. The effective strategy plans to employ Advanced Grower Training Seminars (AGTS) and support On-Farm Workshops (OFW) facilitated by local farm advisers/regional and national experts. Two Organic Farming Educational Conferences (OFEC) will be planned, each of which contains one of the AGTS and additional workshops involving numerous local speakers. We plan to hold one seminar and one conference per year. A mentorship program will be piloted and digital and face-to-face outreach activities will take place as a discussion group focusing on solving grower issues including but not limited to the certification process, organic techniques, creative do-it-yourself low technology solutions, and food safety. These are in response to farmer suggestions. NOFA/RI will evaluate program effectiveness based on feedback from RI specialty crop producers and approaches for increasing the number of RI farms practicing organic techniques as consumer demand increases.
- The RI Division of Agriculture working with Specialty Crop Growers throughout the State will continue to expand on its Get Fresh Buy Local Fruits and Vegetables Campaign by continuing to work with Local Media to continue to promote the Get Fresh Buy Local Program by conducting fruit and vegetable cooking demonstrations featuring local celebrity chefs at all RI Farmers Markets and participating roadside stands. The division will also update its RI Agricultural Display with pictures of nursery stock, fruits and vegetables grown in RI. The Division will also use Specialty Crop Grant Funds to enhance its marketing program by making point of purchase advertising material available to farmers such as price cards and logo material stating Get Fresh Buy Local Fruits and Vegetables.

- The University of Rhode Island Vegetable Production Team will develop and test automated green laser scarecrows as alternatives to propane cannons and netting for protecting crops from birds. Project director is Dr. Rebecca Brown. The laser scarecrows will be optimized for use in peri-urban agriculture, where fields are small and farms are surrounded by neighborhoods. Controlled field trials will be used to evaluate the effectiveness of the laser scarecrows for protecting mature sweet corn from blackbirds and crows, for protecting seedling crops from Canada geese, and for preventing songbirds from feeding on grapes and berries. Trial results will be disseminated to stakeholders through grower meetings, field days, and extension publications. Laser scarecrows are expected to provide growers with an affordable method of controlling bird damage that neither disturbs neighbors nor requires excessive inputs of labor.

South Carolina Department of Agriculture

Amount Awarded:	\$473,990.05	Number of Projects:	15
<ul style="list-style-type: none"> • The Cheraw Beekeeping Careers Training Project (CBCTP) will enhance the competitiveness, sustainability, diversity, and resilience of South Carolina’s population of honeybees (pollinators) through establishing a Beekeeping Careers Training program for Native American citizens of the Sumter Tribe of Cheraw Indians as well as maintaining a resident population of honeybees (pollinators) within the tribally designated jurisdictional area of the Sumter Tribe of Cheraw Indians (i.e. Sumter and surrounding counties of South Carolina) with the overall purpose of protecting and improving pollinator health. • Led by Dr. Anthony Keinath, Clemson University will establish an agreement with the SC Department of Agriculture to execute the following project at the Coastal Research and Education Center (CREC). Growers of watermelons and other cucurbits in South Carolina can spray a large number of fungicides to manage gummy stem blight. Six fungicides, including the commercially available pre-mixes Switch and Inspire Super and the single active ingredients cyprodinil, fludioxonil, difenoconazole, and chlorothalonil (Bravo), will be sprayed on watermelons according to label directions. Leaves with gummy stem blight spots will be collected three times during the growing season. Severity of gummy stem blight and reproduction of the gummy stem blight fungus will be measured in the laboratory. Severity of gummy stem blight also will be rated in the field plots, and marketable-size fruit will be harvested, counted, and weighed. Fungicides will be compared to each other and to water to determine which fungicides reduce severity, reduce reproduction, and increase yield. By choosing fungicides that reduce reproduction and spread, disease management will improve, yields of watermelon and other cucurbits will increase, and growers’ profits will be greater. • Through research findings, demonstrations and educational events the South Carolina Watermelon Association, Inc. expects to enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems. Growers, industry representatives and consumers will be provided current unbiased research and demonstration results which will allow them to make more sustainable production management decisions both for themselves and for teaching others. • Working alongside the South Carolina Department of Agriculture; the South Carolina Watermelon Association requests funds to be utilized in promotion and consumer education as it relates to South Carolina grown watermelons. By utilizing scientifically proven data that supports the “Watermelon Fuels Athletes” slogan trademarked by the SCWA, educating consumers on the health benefits of the consuming South Carolina grown watermelons will provide increased sales and financial support and stability to rural South Carolina communities. • No-till vegetable production offers a more sustainable approach to weed management than the frequent use of herbicides and tillage. This proposed two-year project, led by Clemson University entomologist Dr. Geoff Zehnder, will address roadblocks to grower adoption through on-farm training and demonstration, refined management recommendations, and data on the costs and benefits of no-till compared with conventional tillage and plastic mulch. Project partners anticipate that the project will result in greater adoption of no-till by vegetable growers, reduced use of herbicides, and increased use of cover crops leading to healthier soils. Desired, measurable outcomes will include 1) an increase in the number of vegetable growers who adopt no-till, 2) a reduction in the use of herbicides and tillage operations for weed control by vegetable growers. • Lowcountry Local First (LLF) will enhance the learning of new and beginning farmers and at the same time develop new markets for established growers of specialty crops through our Growing New Markets: through mentor mentee relationships program. Through this project LLF will establish new market opportunities, create jobs and train new and beginning farmers in specialty crop production. Lowcountry Local First will reach its goals by matching mentoring farmers with apprentices (mentees). 			

- For this one-year project, the South Carolina Department of Agriculture (SCDA) Marketing Division will employ alternative approaches for advertising department-sponsored events that focus on specialty crops at the three State Farmers Markets and other venues across the state. SCDA would like to promote its department-sponsored events alongside the Certified SC Grown brand to increase the awareness and importance of choosing to eat foods that are locally grown.
- Clemson University will improve the economic sustainability of the peach industry of South Carolina by enabling the development of peach varieties with increased heat requirement, reducing flower and fruit exposure to potentially crop-destroying frosts.
- Dr. Matthew Cutulle, vegetable weed scientist at the Clemson Coastal Research and Extension Center, is proposing a project evaluating a combination of new sweet potato varieties and herbicides that will improve weed control for sweet potato growers. Outcomes from the project will be improved grower knowledge regarding weed control in sweet potato, which will result in improved profitability for the growers. Research findings will be presented at field days, in extension bulletins and in peer-reviewed publications.
- The Pee Dee Food Hub (PDFH) has been established with a mission “to connect quality local foods from local farmers to local customers” giving the PDFH the opportunity to increase opportunity for local specialty crops growers. The Pee Dee Food Hub (PDFH) exists to market, sell, aggregate and deliver these products from the farms around the Pee Dee to these markets. This SCBGP project gives PDFH the opportunity over the next year to grow these efforts and expand the impact on local specialty crops farmers throughout the Pee Dee Region and statewide in South Carolina.
- The Hub City Farmers Market (HCFM) seeks to enhance the competitiveness of specialty crops through increased consumption. The general task to be completed is the integration of agriculture and nutrition education in primary schools in Spartanburg County. The Agriculture and Nutrition Educator will provide nutrition curriculum at schools, in the form of a nutrition-themed “Traveling Trunk Series.” Nutrition education will promote consumption of South Carolina Grown fruits and veggies which aligns with the nutrition standards of each local School Food Authority (SFA).
- The Carolina Farm Stewardship Association will provide technical assistance to 180 specialty crop producers on post-harvest handling techniques and on-farm infrastructure necessary to meet local buyers’ product specifications. Technical assistance will be provided at workshops (three per year for three years) and direct one-on-one assistance (five per year for three years). Of the 180 specialty crop producers receiving training, a total of 30 will access new market channels including grocery stores, wholesale markets, and food hubs that process, aggregate, distribute, or store specialty crops.
- The Catawba Farm and Food Coalition (CFFC) will establish an agreement with the South Carolina Department of Agriculture to lead and execute a program to support the delivery of fresh fruits and vegetables to underserved communities within South Carolina’s Catawba Region (Chester, Fairfield, Lancaster, Union and York Counties and The Catawba Indian Nation). The project will create a new revenue opportunity for specialty crop producers by connecting them with SNAP customers who reside at housing authorities sites throughout the region who can supplement their purchases with the Healthy Bucks Program.
- GrowFood Carolina will continue to build on its success as the first local food hub in South Carolina, enhancing the competitiveness of specialty crops through increased sales and access as well as facilitating an efficient, effective regional system between the state’s local food hubs. GrowFood will work with a consultant to take the productive initial collaboration of the food hubs, the research and best practices compiled, and the recently developed 5-year strategic plan, to pilot a formal statewide food hub network.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

South Dakota Department of Agriculture

Amount Awarded:

\$290,263.43

Number of Projects:

7

- The Vermillion Area Farmers Market will promote and increase sales and consumption of specialty crops. Specialty crops and producers will be promoted through electronic and print marketing including newspaper advertising, posters, videos disseminated through social media, and a newly created website with resources on local producers, as well as how to grow, prepare and preserve specialty crops in our region. We will also provide education on site at the farmers market about preparation and preservation of seasonal fruits and vegetables. Cooking and food preservation classes off site will further encourage consumers to purchase more specialty crops, especially from local producers

- The Hoven School District proposes to increase the exposure to and the consumption of specialty crops among its Pre-K through 12 population. Specialty crops not currently provided by our Fresh Fruit and Vegetable Program will be produced in the school's greenhouse and coordinated with the 7-12 agriculture floriculture and plant science curriculum toward mass production. The fruit and vegetable will be offered to students through our district's Fresh Fruit and Vegetable Program.
- Lakota Youth Development youth led social enterprise, Honey Lodge will increase pesticide free, sustainable forage for honey bees by creating a restoration garden from native prairie medicinal, edible plants, fruit trees shrubs to increase honey production, educate native youth and communities about bee habitat, benefits of local honey using indigenous native plants and utilizing real foods to return to healthier decolonized diets. This will also be a new related line; native plants and local foods. Youth will learn critical skills and gain experience as apprentices in specialty crops production and provide bee keeping education and expand its sales for their value added local honey and honey products.
- South Dakota Specialty Producers Association (SDSPA) re-energizes the SD Local Foods consortium to create a streamlined statewide effort to develop and coordinate needed statewide policy to provide training and resources for producers, and to expand awareness in consumers of local food as a unique South Dakota "Experience" that benefits producers, citizens, and travelers.
- The Ag Services Division of the South Dakota Department of Agriculture will increase the profitability of specialty crops by deploying an online system to avoid crop damage from pesticide spray drift, and develop an outreach campaign to drive industry participation.
- South Dakota Department of Agriculture oversight
- The Edmunds Central School District presents a proposal that would dramatically impact the exposure to and consumption of specialty crops by developing mobile classroom growing systems geared toward educating and providing opportunities to consume specialty crops not consumed by PreK-6 students in South Dakota due to limitations associated with the per student allocation for general education and the Fresh Fruit and Vegetable Program and obtaining such crops beyond their growing season in three phases: phase one will involve research and development implemented by the Edmunds Central science department perfecting protocols and curriculum associated with growing specialty crops in classrooms for education and consumption purposes during the 2017-18 school year, phase two will involve training up to 50 teachers during the summer of 2018 onsite to implement the same mobile growing systems in their classrooms, and phase three will coordinate their usage during the 2018-19 and 2019-20 school years. Throughout all three phases, 2 extensive efforts will be made to recruit and retain educators into the project and promulgate the concept of growing specialty crops in classrooms for educational and nutritional purposes through presentations, workshops, and published work.

Tennessee Department of Agriculture

Amount Awarded:	\$487,343.57	Number of Projects:	17
<ul style="list-style-type: none"> • Cul2vate engages food deserts with 50% of the nutritious produce grown by Cul2vators and volunteers while providing training and development opportunities in produce production and operations for those desiring employment via a network of partnering enterprises with interests in placing graduated students within their business. The remaining 50% of produce is sold through local markets to fund operations. • Middle Tennessee State University will develop, refine, and perfect protocols for generating plants from established plant tissue callus of <i>Vitis aestivalis</i> 'Norton/Cynthiana', allowing for the determination of the cost of propagation of via tissue culture, comparison to the cost of propagation via traditional techniques, and publication of these results. • The Tennessee Agritourism Association will research and explore the opportunities to maximize your profits when establishing or owning a "pick your own" specialty crop operation by completing a series of bus tours to various "pick your own" farms throughout the United States. These tours will be offered to our 170 association members. • The University of Tennessee will conduct a preliminary evaluation of the potential for hops production and marketing by Tennessee farmers from a thriving craft brewing industry. • The University of Tennessee will improve the Tennessee nursery industry's competitiveness and profitability by developing scientifically based hydrangea propagation and flower color protocols for Tennessee's growing conditions and by developing branded plant education and disseminating this information to the Green Industry through workshops, fields days, and multimedia educational materials. • Tennessee Department of Agriculture oversight 			

- The Tennessee Farm Winegrowers Alliance (TFWA) needs professional, dedicated leadership to coordinate and facilitate growth in the grape and wine industry. TFWA is a vital industry asset that is central to the state's positioning as a leader in regional wine production and dedicated and sustainable leadership is critical to expanding marketing opportunities and continued industry growth, particularly benefiting rural areas in Tennessee.
- The Appalachian Region Wine Producers Association will grow Tennessee's Specialty Crop Industry by petitioning the US Department of the Treasury, Tax and Trade Bureau (TTB), to establish the Upper Cumberland American Viticultural Area (AVA) and disseminate information to the industry and public. An experienced professional team has been assembled to provide the TTB's specific legal, geographical, climatic, map and soils data requirements that must be met for the AVA petition to be developed and perfected.
- Landmark Training Development Company seeks to expand its' urban farming operation with the addition of a fruit tree orchard and to continue its Youth Urban Farm Training Program.
- Memphis Tilth's Bring It Food Hub program is requesting \$22,500.00 through the Specialty Crop Block Grant (SCBG) program to increase sales distribution channels, and decrease transportation barriers within the Memphis area for small-scale specialty crop growers in the Mid-South. The mission of Memphis Tilth is to cultivate collective action for an economically sustainable, socially equitable, and environmentally sound local food system.

Since 2013, it has been the Bring It Food Hub program's mission to promote community development in Memphis and the Mid-South by increasing access to healthy, affordable local foods and strengthening farmer livelihoods. We work closely with regional farmers who follow sustainable production practices that conserve natural resources and biodiversity, and aggregate fruits and vegetables from 92 small-scale specialty crop growers, 26 of which are located in Tennessee, while simultaneously helping them to identify and develop new market opportunities through direct-to-consumer and wholesale distribution channels. Through the use of our e-commerce wholesale software, Local Food Marketplace (LFMP), Bring It Food Hub has been able to create a market opportunity for growers to sell their specialty crops online to an open forum of customers, ranging from large wholesale institutions, nonprofits, restaurants, congregations, and community groups. Currently, Bring It Food Hub distributes the products of 28 growers to 5 wholesale clients. We want to continue to grow this online market space so that we can aid small-scale producer's competitiveness in a market dominated by large, conventional suppliers and distribution channels. All growers who distribute through Bring It Food Hub's distribution channels are required to use this system. Over the course of this project we would like to increase the number of specialty crop growers actively using the Local Food Market Place online system to 50 and active buyers to 20.

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Local Food Marketplace (LFMP), an online ordering platform which Bring It Food Hub uses for sales and distribution, continues to create more visibility and sales opportunities in Memphis for our growers. In our initial year using the LFMP online system, Bring It Food Hub distributed the products of 5 growers to a single institutional client (as well as internal ordering) representing sales of \$40,418.04. However, Bring It Food Hub has identified transportation and delivery barriers that come along with increasing our procurement of specialty crops from local growers. Many of the growers we work with are only able to travel to Memphis (generally over 200 miles, roundtrip) once a week to sell at weekend farmers markets, and to fulfill limited wholesale deliveries. In some instances, this limits growers' opportunities to only sell at farmers markets, which experience ebbs and flows of sales with changing seasons. Bring It Food Hub wishes to establish a Saturday food hub pick up from the farmers markets, from growers selling into the LFMP wholesale. This one stop delivery opportunity for growers who are only in Memphis during the weekend will allow growers to begin or increase sales into Bring It Food Hub, increasing their customer base and sales revenues. If we gain the support to procure, store, and transport food from growers during Saturday market hours, sales opportunities will increase for these growers who participate in our LFMP and Farmigo (direct to consumer) e-commerce wholesale platforms. This will entail having funds to procure the appropriate refrigeration equipment for transport, as well as staffing to receive the product during this new pickup time. Additionally, Bring It Food Hub will host several e-commerce workshops to recruit more growers and provide hands-on training in how to use Local Food Marketplace.

The outcomes of this project will be measured by the increases in participation by specialty crop growers and local buyers on Local Food Marketplace, in wholesale distribution through Bring It Food Hub, and in income and sales for small-scale specialty crop growers not previously engaged, or minimally engaged in the Memphis market.

- Rosecomb Apiaries will establishment a network of Sentinel Apiaries to mitigate honey bee parasites Varroa destructor and Nosema spp., increase honey production, and serve as an early warning system for neighboring beekeepers for disease outbreaks and nectar flow.
- The Tennessee Fruit and Vegetable Association (TFVA) will bolster both the in-person and on-line resources that they offer their members in order to enhance the competitiveness of the fruit and vegetable industry in Tennessee.

- The specialty crop programming portion of Crabtree Farms' TASTEBUDS GROW CHATTANOOGA program, offers additional, enhanced marketing opportunities to specialty crop growers that will increase the marketing presence and public awareness of specialty crops in 37 counties across Southeastern Tennessee¹ by providing producers with media platforms they would not otherwise have access to, such as: ads on TV WRCB Channel 3's six social media platforms and television, 1-minute farmer stories aired a minimum of two times a week on a local NPR station with a new story each week during six months of the growing season, a modern website template for specialty crop farmers on the TASTEBUDS GROW CHATTANOOGA website, and an emblem included in the print and digital local food guide depicting growers of, and purchasers of, Tennessee-grown specialty crops.

The success of this programmatic portion is heightened because it is housed within a larger local food promotion program. The efforts will be separate but tandem, creating a stronger and more cohesive effect for both the public and the beneficiaries of the program. By working in year one to establish a baseline of specialty crop sales in our region we will be able to measure the outcomes of our program in year three. Following a greater marketing presence and awareness of regionally grown specialty crops, it is estimated sales will increase by 7%, with the commensurate increase in sales dollars over baseline, once established, over the course of the 3 year study.

- College of Agriculture, Human and Natural Sciences, Tennessee State University,
 5. To conduct interactive hands-on training programs for small and minority farmers' in producing and marketing of pesticide-free, locally grown in soilless media the day-neutral strawberry under raised soilless trough system as to improve their household income of small and minority growers and health of Tennesseans.
 6. Setting-up of day-neutral strawberry production under raised soilless trough system unit will be built to train small and minority farmers during the first year at Tennessee State University's main campus Agriculture Research and Education Center plus one demonstration units will be set on grower farm.
- Located in the heart of the Tennessee nursery-producing region, the Tennessee State University Otis L. Floyd Nursery Research Center is perfectly situated to address the challenge of timely and accurate diagnosis of boxwood diseases and also train the nursery producers on the prevention and management of boxwood diseases specifically boxwood blight through partnership with the Tennessee Department of Agriculture (TDA). This study will have three outcomes: 1) identification disease threats in the Tennessee nursery industry and assessment the impact of known boxwood diseases in the state; 2) development of a boxwood disease image repository that can be used to estimate damage and train TSU extension agents, regulatory officials, students and nursery producers in recognition of symptoms, and assist in the training and review of diagnostic test results and organism morphology to improve the speed and accuracy of diagnostics in a regionally relevant manner; 3) organization of training (short courses and field days) and development of extension-based publications, fact sheets and video clips for nursery growers and extension agents that will provide practical advice regarding the impacts and benefits of using boxwood disease management strategies in nursery production. This project will provide a thorough synthesis of the effects and value of early detection and accurate diagnosis and training on prevention and management of boxwood diseases in Tennessee nursery production system and also will help Tennessee nursery producers and the TDA implement management strategies to prevent the entrance and dissemination of destructive plant pathogens such as boxwood blight in nursery production system.
- Columbia State Community College (CSCC) will partner with Hampshire Unit School and the College of Agricultural Sciences and Natural Resources at The University of Tennessee (UT) to (1) train future generations of Growers through the development of a Specialty Crop teaching, research, and demonstration farm on the Hampshire School Property, and (2) increase consumption of Specialty Crops by Hampshire School students and students in other schools participating in Specialty Crop training days at Hampshire.

The Hampshire K-12 Unit School in Maury County is being transformed into a Project Based Learning School focused on agriculture and natural resources. The goal is to make Hampshire a model feeder school for the agricultural degree programs at CSCC and UT. Students at Hampshire will learn to grow Specialty Crops, conduct research, and offer training through online modules and training days for beginning farmers and farmers who want to diversify their income. As a Project Based Learning school (PBL), Hampshire will seek input from growers to identify student conducted projects that address the needs, problems, and opportunities of Specialty Crop growers across the state. As a capstone science project, students will develop and conduct a research project on a Specialty Crop, including field trials. Students will learn to grow a variety of Specialty Crops including fruits, vegetables, grapes, flowers, and indigo. This grant will result in the development of a professional level master plan for the Specialty Crop Farm at Hampshire School. The plan will enable securing funds to create and support the Farm.

- Tennessee Technological University will evaluate several bush-type heirloom green bean lines by examining yield, yield stability, and biotic constraint susceptibility of lines under varying environments and production practices in Tennessee growers' farms. The elite heirloom lines included in this trial will be the highest yielding lines and/ or lines with unique niche market pod phenotypes identified from commercially unavailable, regionally adapted, heirloom bush-type green bean lines held by the Sustainable Mountain Agriculture Center. This study is expected to identify lines that will be useful for a range of Tennessee stakeholders including commercial growers and home gardeners. The results from this study will be disseminated to stakeholders through grower meetings and conferences.

Texas Department of Agriculture

Amount Awarded:	\$1,652,403.32	Number of Projects:	16
<ul style="list-style-type: none"> • J&D Produce will lead a project to improve quality and market acceptance for tomatoes grown in multiple regions of Texas, under multiple production systems. Other collaborators include Texas A&M, Rio Valley Canning, and four other growers around the state. The project will involve both protected (high tunnel and greenhouse) and open-field production of several virus-resistant cultivars from the Texas A&M breeding program and Seminis seeds, by six growers to decide which best meets the market requirements. • The Nacogdoches-Nacogdoches County Economic Development Corporation (NacEDC) will partner with Texas A&M AgriLife Extension and Stephen F. Austin State University (SFASU), Nacogdoches, to conduct a Texas Kiwifruit Evaluation Project. This project builds on crops at a small Kiwifruit planting at SFASU established in 2011. This project holds the promise of introducing a new specialty crop to the Texas market. • The Texas Hill Country Wineries Association, in partnership with Texas A&M AgriLife Extension will initiate a study on the efficacy of a variety of environmental screening systems for combined protection against bird damage, hail damage and frost. Additionally, screening systems will be evaluated for effects on fruit quality and vine health. • The Texas Watermelon Association, in collaboration with Bagley Produce Co., Wiggins Watermelon LLC, Pennington Melon Farms, Prukop Farms, Mandujano brothers, and the Vegetable and Fruit Improvement Center at Texas A&M University AgriLife, will develop an effective metabolite biomarker-based screening method for the selection of Fusarium wilt-resistant watermelon lines. Breeders can use these biomarkers to select Fusarium wilt-resistant cultivars for cultivation. • This project will be conducted by the Uvalde County Underground Water Conservation District (UCUWDC, primary applicant) and Texas A&M AgriLife Research (partner). If awarded, UCUWCD will establish a contractual agreement or contractual relationship with the Texas Department of Agriculture to lead and execute the project in conjunction with Texas A&M AgriLife Research, Uvalde (project partner) and Weslaco and College Station (collaborators). The project will enhance the competitiveness of tomato production in Texas by developing scientifically-based grafting systems to implement in high tunnel and conventional/organic fields and by disseminating results to stakeholders through grower meetings and field days. • Wintergarden Spinach Producers Board will lead a project in collaboration with Del Monte Foods, Inc., My Father's Farm and the Texas A&M AgriLife Research and Extension Center at Uvalde to demonstrate sustainable practices by developing nutrient management strategy, identifying varieties suited for regional organic production and evaluating nutraceutical potential of organic spinach for canning/processing. To boost the competitiveness, we have involved regional producers and to evaluate the quality for organic spinach for processing industry partners will work with The Texas Food Processors Association (TFPA). The outcomes of the project will be disseminated to organic producers and stakeholders interested in the organic production through field days organized by Uvalde, AgriLife Research and Extension Center, presence in the growers meetings and research conferences, media reporting and direct visits with organic and in-transition producers. • The East Texas Grape and Wine Producers, in partnership with the Texas A&M AgriLife Extension Service, aim to improve the productivity and quality of grapes and wine produced in Texas through several research projects including an evaluation of active frost protection systems, and studies to improve the consistency of grape and wine quality in the vineyard with coordinated sampling and data collection, as well as in the winery using specific enzymes to naturally increase acidity and decrease the pH of juice/wines. This project addresses important challenges for grape and wine producers statewide and serves to enhance the competitiveness of grape production in Texas. • In response to rising interest in pomegranate as a new crop, Texas Pomegranate Growers' Cooperative in partnership with Texas A&M AgriLife Research Center at El Paso and Texas A&M AgriLife Extension at Overton and Uvalde propose to identify region-specific superior cultivars and conduct outreach activities to growers and consumers to increase awareness and acceptance. 			

- Black Gold Farms, in collaboration with Texas A&M AgriLife Research in Amarillo, will conduct research that will provide information required by farmers to establish and carry out an integrated pest management (IPM) program for the tomato/potato psyllid (TPP) and zebra chip (ZC) of potato. Specifically, they will conduct a statewide survey and monitoring program for TPP, and also screen germplasm from the Texas A&M AgriLife Research potato breeding program for resistance to ZC. As part of the survey, potato psyllid populations will be monitored weekly in all major potato production regions of the state, psyllids will be tested to determine if they are carrying *Candidatus Liberibacter solanacearum* (Lso), the bacterial pathogen that causes ZC, and the genetic type (haplotype) of both TPP and Lso will be determined by molecular diagnostic analysis.
- The Texoma Craft Beverage Alliance will lead a project in partnership with Texas A&M AgriLife Extension (AgriLife Extension) to develop research on initial evaluation of hops varieties best suited for both production, final flavor, and potential botanical medicinal value in Texas. Expected outcomes include best recommended varieties for establishment, cultural practices, and increased investment (with reduced risk) in hops production in the state. General tasks include 1) the installment and management of five research trials in different climate regions from Dennison to Weslaco, 2) chemical analysis of flavor and medicinally important compounds contained in the raw hops, and 3) reporting on the results to the industry and through Extension publications to enable success by interested producers and end users of this specialty crop.
- Texas Nursery & Landscape Association (TNLA) will partner with Texas A&M AgriLife Extension to investigate nursery water conservation through a sensor-based automated monitoring and irrigation system. The project will be conducted at the container division of Magnolia Gardens Nursery in Waller, Texas. Sensor-based automated irrigation aims at providing just the right amount of water to plants to avoid either drought or flooding. Sensor-based automated irrigation system will be installed at Magnolia Gardens Nursery to monitor and control irrigation, and compare to conventional irrigation. The amount of water used will be monitored. In addition, plant growth and plant health will be monitored and compared.
- The Marketing Team in the Trade and Business Development Division at the Texas Department of Agriculture (TDA) will lead an educational outreach and marketing campaign to promote specialty crops in schools, at home, and in the garden. Anticipated project outcomes include an increase in the knowledge of youth of specialty crops, increased access to and consumption of specialty crops, and increased specialty crop sales at the retail level.
- The Texas Citrus Pest and Disease Management Corporation (TCPDMC) in cooperation with USDA and Texas Department of Agriculture (TDA) will provide assistance in detection and education of quarantinable pests and diseases. These pests and diseases include Asian Citrus Psyllid (ACP), Mexican Fruit Fly (MFF), Citrus Canker and Huanglongbing (HLB). Through scouting efforts in both commercial groves and residential areas, trap monitoring, fruit removal and educational presentations for growers and residents in both English and Spanish, TCPDMC will provide a reduction of quarantines and reduce the pest populations.
- United Supermarkets LLC, in collaboration with scientists from Texas A&M AgriLife Research and West Texas A&M University, will conduct research to determine the economic feasibility of commercial, high value vegetable crop production in the Texas Panhandle. The study will focus on production of locally grown, high quality tomatoes and peppers compared to field corn, cotton and wheat, the predominant irrigated crops grown in the region. Specifically, tomatoes and peppers will be grown using cutting edge, commercially available production practices and particular attention will be paid to the amount of water required to produce the crops. Then, an economic analysis will be conducted that will quantify key economic measures which will include revenue, costs, profitability, return on investment, breakeven prices and yields, and payback period.
- The Texas Wine and Grape Growers Association, in partnership with the High Plains Winegrowers Association and the Texas Hill Country Wineries, intend to grow agritourism opportunities by educating wine grape growers on the importance of accurate data relating to wine grape acreage and varieties grown and collecting wine grape acreage and varietal data through a series of regional grower workshops.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

U.S. Virgin Islands Department of Agriculture

Amount Awarded:	\$203,019.77	Number of Projects:	3
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- The US Virgin Islands Department of Agriculture (VIDOA) is seeking to create and serve as lead agency for the establishment of a VI Farm to Hospital pilot program. This pilot project will seek to increase the competitiveness of Specialty Crops in the US Virgin Islands by incorporating locally grown crops onto the menus of VI Health Care Food servicers – to increase nutritional knowledge, access and consumption of fresh locally grown produce.

- The US Virgin Islands Department of Agriculture (VIDOA) to create a Marketing Manager Position within the VIDOA devoted to managing SCBG-supported projects and programs such as monitoring SCBG project sites to ensure compliance, conducting post-harvest technique trainings to famers to assure product quality is optimum for market, Outreach activity to educate community, new and beginning farmers through awareness the benefits of locally grown specialty crops to encourage increase consumption of fresh local food for healthful living.
- The University of the US Virgin Islands, Cooperative Extension Services (CES) and Agriculture Experiment Station (AES) is seeking to conduct research on Jicama Production and Market Potential in the V.I. Production has been reported to take 4-9 months, with tuberization after flowering under shorter day length; as a result of being subtropical, it has potential for production in the Virgin Islands. Therefore, this research will develop and evaluate production parameters for the successful production of Jicama in the Virgin Islands.

Utah Department of Agriculture and Food

Amount Awarded:	\$297,985.97	Number of Projects:	10
<ul style="list-style-type: none"> • Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding. • Thanksgiving Point Institute will increase consumer use of Specialty Crops through Teaching Gardens & Programs. This project will support the community need to provide a place for adults in our community to learn and engage with gardening techniques and to promote and sell specialty crops to our community members who desperately seek engagement with at-home gardening and fresh produce. • With the support of the Utah Department of Agriculture's Specialty Crop Block Grant Program, New Roots staff and farmers will embark on an exciting, community driven process of exploring best practices for fall, winter, and spring production of specialty crops in Utah's climate. Furthermore, lessons learned, best practices established, and finished season extension infrastructure will be shared with other local producers who will be able to learn about a variety of season extension methods and adopt those that fit best with their capacity, finances, and farm sites. This project presents an opportunity for 45 New Roots refugee farmers, including beginning and intermediate growers, to learn more about season extension, and for 15 advanced New Roots farmers over 16 months to benefit from direct engagement with extended seasonal production and marketing through production at the Glendale Farm. The project will also share information with at least 20 Utah producers through a Fall Farmer Field Day, and will contribute valuable learning to the local agricultural community while increasing supply and demand for local crops, an exciting prospect for Salt Lake City's burgeoning local food economy. • Utah TRAPs (Temperature Resource and Alerts for Pests) is a compilation of decision aid tools that include information to help fruit and vegetable producers manage their crops. It was formed from a collaboration with the Utah Climate Center, and pulls data from 25 crop weather stations that were installed in 2003. TRAPs has evolved from a simple online tool to a mobile app and text alert system, and is now used by more than 600 specialty crop producers. To keep Utah TRAPs and the information it produces relevant, the weather stations need critical upgrades to continue delivering quality data, and the TRAPs system and the formatting of weather data from 2003-present requires an upgrade to allow for new technological tools for growers, and to access data from an additional 35 weather stations. This project will reach 378 fruit and vegetable producers and generate 13 interactive online charts and graphs. It is expected to result in a 30% reduction in pesticide and irrigation inputs and an 80% reduction in overall costs due to reduced inputs and healthier plants/produce. It will be evaluated by user statistics, a series of 5-question polls, a comprehensive survey, and interactions with an advisory committee. • Small-acreage fruit and vegetable producers are looking for high value crops as diversification opportunities. One potential opportunity is cut flower production, which is common in some areas of the U.S. but has not been well developed as a specialty crop for the Intermountain West. Research plots of representative examples of annual and perennial cut flower crops will be evaluated at the Utah State Agricultural Experiment Station Greenville Research Farm. Crops produced will be sold through local markets for economic analysis purposes. Management systems and recommendations will be developed and disseminated through the Utah Urban and Small Farms Conference and other USU Extension activities. 			

- The Utah Department of Agriculture and Food will conduct informal research and promote ways to improve/increase agriculture production of specialty crops for local markets, improve local food distribution and increase access to local specialty crops by end users. We will research production and distribution opportunities through a literature search and in-person visits of innovative farms, hydroponics/aquaponics equipment suppliers and local food distribution hubs. UDAF will present findings to the annual Urban and Small Farms Conference in February 2019, which is attended by approximately 100 farmers and Ag. support agency representatives. We will have two food production and distribution representatives from Idaho come speak to the Urban and Small Farms Conference as well.

- Honey bees are the main pollinators of specialty crops in Utah. They are usually adequate due to their numbers; however, honey bees are a cost to maintain and hives are frequently lost despite good management. Growers in Utah need a more stable pollination system for specialty crops – one that is resilient over the long term and does not depend on a single pollinator species.

One of the best ways to deepen a pollination system is to add more pollinators. Farmers can attract many different types of pollinators to a farm simply by providing habitat for them, mainly nectar and pollen plants. Pollinator forage plants will attract many types of “native” or “wild” bees that will also pollinate specialty crops. Providing forage habitat is the best way to enlist the services of free native pollinators while also supporting the health of managed honey bees.

Our project will install 0.25 acres of pollinator forage habitat on a diversified farm in Riverton UT growing bee-pollinated crops. We will establish a perennial “bee garden” containing shrubs and wildflowers (2,000 sq ft), native meadow strips (4,000 sq ft), and a dual-season cover crop field border (6,000 sq ft).

Once established, these habitats will comprise a demonstration site to other growers and be the basis for outreach and education. Field days hosted by Xerces Society Pollinator Program staff will be held at Petersen Farm in 2020. Utah farmers will also benefit from presentations at the Urban and Small Farms Conference and new USU Pest Fact Sheets on the benefits of maintaining on-farm pollinator habitat.

- Utah has close to 800 large and small commercial vegetable farms and 750 tree fruit, nut and berry farms according to the 2012 NASS Census of Agriculture. Monitoring large fields or orchards for factors effecting crop production including plant diseases, drought stress, nutrient deficiencies and seedling or transplant quality is very time intensive and difficult for growers. In the last few years, growers in many states have started to use drones or unmanned aerial vehicles (UAV) with visible light and near infrared cameras to monitor crops in fields. For example, in Arizona growers can detect individual lettuce seedlings the size of a quarter with UAVs and can determine field stand counts and project yield estimates for each field at this growth stage. In Utah in 2016, for example, in collaboration with scientists from Arizona we flew over sweet corn and were able to detect High Plains Virus in the field and determine that it was seedborne based on the pattern in the field. Many growers we talk with at grower meetings in Utah are very interested in the use of UAVs in their farm operations and some have already purchased UAVs with cameras. However, many growers are either unsure or unaware of the specific applications that UAVs are capable of and what type of camera would be the most useful for them. The project consists of two objectives. The first objective is the evaluation and identification of vegetable crops for which visible light or near-infrared can be used for early detection of disease and planting problems as well as water stress. In addition, we will determine for which crops yield estimates could be accessed. The second objective consists of three workshops for vegetable growers to learn about the different types of UAVs and cameras available and possible applications for UAVs in their farming operations. One workshop will be held in Southern Utah and two in Northern Utah. Funding for this project would allow us to identify the specific uses for UAVs in Utah and provide workshops for growers to learn about UAV applications in their operations. The use of UAVs on farms could reduce labor cost, minimize yield losses and provide a way for growers to estimate yield.

- According to the 2016 NASS Census of Agriculture, Utah has over 6,000 acres in stone fruit production and produces over \$40 Million pounds of tart cherries per year. In the last twenty years, some trees – especially mature tart cherry trees – have suddenly died with all the fruit remaining on the tree. While the mortality was initially attributed to the soilborne pathogen *Phytophthora*, testing in the summer 2016 at a specialized laboratory in Oregon showed no indication of *Phytophthora* infection. The laboratory suggested the trees may have succumbed to Western X disease. Unfortunately, no tissue suitable for testing for Western X disease from the dead trees was available. Western X disease is caused by a phytoplasma transmitted by several leafhopper species including mountain leafhopper and cherry leafhopper. The pathogen can infect all stone fruit species and symptoms frequently include early fall coloring of leaves starting in June. On cherries, additional symptoms such as small, unmarketable fruit develops. If tart cherries are grown on ‘Mahaleb’ roots stock, which many Utah growers use, trees will remain asymptomatic until the tree suddenly dies matching the symptoms seen in the field. Both known leafhopper vectors have been found in Utah but their distribution in the state is unknown. Both the leafhoppers and the phytoplasmas have known wild hosts including dandelion and clover which are frequently found near or in orchards. Phytoplasmas cannot be cultured and molecular testing is necessary to identify the pathogens. To test for Western X disease, DNA will be extracted from leaf phloem. DNA samples will be tested with specific phytoplasma primers in a polymerase chain reaction (PCR) for the presence of phytoplasmas. Out-of-state testing for Western X disease can cost growers \$100-200 per sample. If samples could be tested in Utah the cost to growers would be reduced to \$30 per sample. The objectives of this proposal are (1) to develop a phytoplasma testing protocol that can be used in Utah and (2) to conduct a survey to determine the presence and distribution of the disease and its vectors in the tree fruit growing regions of Utah.
- The brown marmorated stink bug (BMSB) invaded North America from eastern Asia, and has been established and reproducing in urban-agricultural landscapes of northern Utah since 2012. In 2016, BMSB invaded commercial agricultural crops; peach orchards and a fruit stand in Davis, Weber and Utah counties. BMSB is a severe economic threat to commercial and community and home garden fruit production; it has caused multi-million dollars of loss in the Mid-Atlantic and Northwest regions of the U.S. (Leskey et al. 2012c, Shearer and Wiman 2013). BMSB feeds on a wide range of plants, and invades crop fields and orchards from host plants on the borders. Insecticide-based control has proven challenging due to the tolerance of BMSB to insecticides, and high dispersal capability that allows adults to move efficiently among diverse plant hosts. In this project, intensive orchard sampling will include fruit trees and bordering plant hosts using visual inspection, beating trays, insect vacuum and pheromone traps throughout the growing seasons of 2018 and 2019. Surveys will be conducted in the important fruit producing counties of northern Utah: Box Elder, Weber, Davis, and Utah. Plant host use and timing of BMSB life stages (eggs, nymphs and adults) in relation to plant development (phenology) will be evaluated to determine preferred plant hosts during key BMSB life history events: overwintering, spring emergence, and summer and fall feeding and reproduction. To determine the extent of anticipated fruit crop injury from BMSB, apple, peach and cherry (sweet and tart) buds, foliage, stems and fruits will be exposed to BMSB life stages within cages at the USU horticultural research farm in Davis County. Commercial traps and pheromone lures will be evaluated for their attractiveness throughout the season for the different BMSB life stages and generations. Surveys for native and introduced natural enemies will be conducted with special attention given to the search for a highly effective parasitoid wasp from eastern Asia that has recently been found in the eastern and western U.S., the samurai wasp. Biological control is a potentially important contributor to long-term suppression of this invasive insect (Rice et al. 2014, Talamas et al. 2015). The outcomes and impacts of this project will produce 1) an expanded plant host list with BMSB preferences in Utah, and determination of BMSB seasonal phenology in and near commercial fruit orchards; 2) assessment and characterization of fruit tree injury from BMSB, including tree developmental stages from bud through fruit, extent of injury from immature and adult BMSB life stages, and crop preferences for oviposition (egg-laying); 3) determination of efficiency of multiple commercial traps and lures for BMSB across seasonal and insect phenology timing to develop effective monitoring tools and trap thresholds for Utah fruit orchards; 4) determination of native and introduced beneficial insects and spiders to help combat BMSB in fruit orchards and adjacent environments; and 5) educational outreach to fruit producers, crop consultants/educators, and community and home gardener audiences.

Vermont Agency of Agriculture

Amount Awarded:	\$274,538.40	Number of Projects:	8
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- The Northeast Organic Farming Association of Vermont (NOFA-VT) will determine the market potential of institutional wholesale as it relates to farm viability by aggregating crop-specific cost of production data, providing technical assistance to help farmers determine crop-specific costs of production and cost of sales in different market channels, and facilitating value chain transparency between farmers and institutional buyers.
- Salvation Farms will increase market outlets for Vermont’s specialty crop producers by providing post-harvest handling, processing, and marketing of surplus and seconds produce to Vermont’s institutional meal programs.

- The University of Vermont will address the problems associated with managing Colorado potato beetle infestations and their subsequent damage via a three-part study: (1) management trials of different entomopathogenic nematode (EPN) application protocols, (2) seasonal monitoring of EPN soil persistence, and (3) outreach to encourage grower adoption. This project will assess the efficacy and persistence of locally adapted EPNs applied both above and below ground as biocontrol agents for CPB.
- The University of Vermont Fruit Program will evaluate emerging winegrape cultivars in a long-term replicated trial, screen Vermont vineyards and the primary commercial nursery in the state for presence of potentially damaging grape viruses, and assist with development of a clean plant certification program for Vermont grape nurseries.
- Green Mountain Farm-to-School (GMFTS) will increase the number of schools running Vermont Harvest of the Month (HOM) programs, increase procurement of specialty crops, train other organizations and schools in a successful model of production planning, and increase the overall efficiency and effectiveness of HOM programs over the course of a three-year project.
- The Vermont Agency of Agriculture, Food and Markets (VAAFAM) will provide market access support to direct marketing farms and connect consumers to local food, specifically specialty crops, to increase purchasing through a range of marketing outlets including farm stands, CSAs, farmers' markets, independently-owned retail stores, coops and grocers, and restaurants.
- University of Vermont scientists at the North American Center for Saffron Research and Development will increase revenues for small diversified farms using a grower-participatory research approach to assess the economic feasibility of growing the high-value culinary spice and medicinal plant, saffron, in the field within different coldhardiness zones around Vermont; collecting data on product yield (saffron and corm production) and production costs; and transferring the technology to agricultural stakeholders (Vermont diversified growers, herb farmers, Extension personnel, etc.) in on-site demonstration events.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Virginia Department of Agriculture and Consumer Services

Amount Awarded:	\$481,410.50	Number of Projects:	11
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- The Virginia Tech Eastern Shore Agricultural Research and Extension Center will increase fresh market tomato, broccoli, and sweet corn production by 14% by updating sulfur fertilizer recommendations using field research, through updating vegetable production guides, via field days, and grower meetings.
- Broccoli and other brassicas are important vegetable crops in Virginia. Virginia produces over \$12 million US in broccoli, and the crop is steadily gaining popularity. One of the most impactful diseases plaguing broccoli production is Alternaria head rot, caused by the fungus, *Alternaria brassicicola*. This disease can cause significant losses, with one Virginia broccoli grower suffering nearly 50% losses as a result of the disease over the past two seasons. Damage in other cruciferous crops such as cauliflower, cabbage, and greens have been impacted in similar fashion. Researchers at Virginia Tech's Eastern Shore Agricultural Research and Extension Center (ESAREC) in Painter will conduct research objectives to better understand why Alternaria diseases are on the increase in brassicas. To accomplish these goals, we will network with growers to collect symptomatic samples from broccoli fields and other brassicas in the 2017 and 2018 growing seasons. Samples will be assessed for sensitivity to commonly used fungicides. Replicated field trials will also be conducted to assess fungicide efficacy in field settings. Results from this study will be used to develop practical and effective management strategies for this disease, improve grower productivity and profitability, improve IPM education and outreach techniques. In addition, researchers will examine the possibility of human pathogen survival on broccoli and other brassicas to determine risk potential and possible mitigation steps. This research will ensure the sustainability and growth of broccoli and other brassica crops in Virginia.

- Appalachian Sustainable Development (ASD) and its partners Virginia Cooperative Extension and AgCon will enhance the competitiveness of fresh fruits and vegetables by providing training and one-on-one technical assistance to specialty crop farmers across Virginia in support of obtaining the food safety certification they require to access scale appropriate markets. Two hundred produce farmers will be prepared to obtain USDA Good Agricultural Practices (GAP) and Harmonized GAP with Global Addendum certification and will be prepared for Global GAP should the markets make such a change necessary. Additionally, ASD will work with its partners to enhance and incorporate Food and Drug Administration's (FDA) Food Safety Modernization Act Produce Safety Rule requirements, including providing FSMA training by qualified Lead Trainers, establishing clear interpretations for which farmers will need to comply with these rules and when, and developing and delivering appropriate recordkeeping processes and tools. Eighty farmers will receive USDA GAP, Harmonized, Harmonized with the Global Addendum, Primus or other food safety certification.
- The Institute for Advanced Learning and Research (IALR), in partnership with Virginia Cooperative Extension (VCE), industry leaders, and growers, will seek to improve Virginia strawberry production and sustainability by utilizing biological control methods to reduce disease pressure associated with strawberry production. In the past and prior to 2005, strawberry growers relied heavily on methyl bromide (MB) to control such soil borne diseases. As MB is now banned, and the use of 1,3-dichloropropene (1,3-D), a potential replacement, is limited in the Mid-Atlantic due to high water tables, proximities to sensitive areas, and human health concerns, viable alternatives to soil fumigants are needed to sustain future strawberry production and to keep this specialty crop strong statewide. To address this issue, this proposed two-year research project will utilize various biological based approaches to reduce disease occurrence and impact in the field. Together, this team of experts will test promising treatments in greenhouse experiments first, to determine disease inhibition capabilities. Next, in partnership with commercial strawberry suppliers, strawberry plantlets will be introduced to promising treatments before transplanting to the field. The final stage will be to work with four to five farmers to observe plant growth performance and disease incidence under field studies. VCE will oversee field trials and field data interpretation. Outcomes are focused on increasing strawberry health and productivity naturally, compared to controls.
- Virginia Tech will reduce foodborne pathogen contamination in specialty crops by evaluating the risk of pathogen infiltration into susceptible commodities during submersion in water. These findings will directly support the Virginia specialty crop industries including apple, peach, cucumber, cantaloupe, and tomato in compliance with the Food Safety Modernization Act's Produce Safety Rule (PSR) and implementation of feasible science-based interventions to prevent contamination events during postharvest handling activities. Results will be communicated to stakeholders through Produce Safety Alliance Grower Trainings (which are held throughout Virginia; currently the only FDA-approved course for training requirements) and extension forums including Virginia's Annual Tree Fruit School, grower association meetings, and Virginia Cooperative Extension fact-sheets. Pathogens may infiltrate into the fruit core and inner tissues when warm fruit from the field are submerged into colder water. Therefore, the proposed project aims to evaluate the risk of *Salmonella* and *Listeria monocytogenes* infiltration into susceptible specialty crops with ambient (21°C) and refrigeration (4°C) core temperatures submerged into water at various temperature differentials, simulating common postharvest practices. Historically, to prevent pathogen infiltration into fruit during submersion in water, it was recommended that operations achieve a 10°C temperature differential between fruit pulp and postharvest water. However, recent data showed that decreasing submersion time in water was more effective at reducing pathogen infiltration than reducing temperature differential. Currently, several specialty crops are submerged in water during postharvest handling (to increase quality and visual aesthetics), thus this proposed research has important food safety implications, as well as safe harbors for PSR compliance.
- Considering that potato is one of the three main vegetable crops in Virginia with over 4,700 acres and more than \$18 million crop value (U.S. Department of Agriculture, 2017), improving tuber quality by reducing losses to Internal Heat Necrosis (IHN) and bruising will enhance the competitiveness of the crop with a significant impact to the industry in Virginia. IHN and bruising or skinning are among the limiting factors to quality potato (*Solanum tuberosum* L.) production and cause considerable economic losses to growers in Virginia. High temperature prior to harvest is conducive to IHN, which results in browning of the tuber tissue. Similarly, bruising is a key concern during harvest that results in unattractive scars and blackspot in table-stock potato, and the wounds are a venue to disease infections. Calcium content in the tuber tissue has been associated with a reduction in the incidence of IHN and bruising in potato. However, translocation of calcium into the tuber is difficult, so tuber calcium content is usually insufficient to ameliorate quality problems. Therefore, this project will investigate and develop a calcium application program (calcium sources, placement and timing of applications) to improve tuber content and reduce the incidence and severity of IHN and bruising. The generated information is expected to help farmers to reduce the losses to IHN and bruising in Virginia and improve the sustainability of the industry.

- ODU Research Foundation (through Dr. Horth's laboratory in the Biology Department at ODU) will test honeybees from strawberry farms in Virginia for three bee diseases (Nosema apis, N. ceranae and sac brood virus). Honeybee colonies have been collapsing in Virginia and disease is associated with collapse. Which diseases, and how, is poorly understood. We have added mason bees to berry farms to improve crop yield. Mason bees will also be tested for disease. We can compare disease load for the bee species, which is important information for future use of mason bees on farms if they transmit disease to honeybees. If mason bees have lower rates of disease or are disease free, this is important information with respect to continued use on farms since honeybees are dying in record numbers (44% of hives collapsed in 2016, increased from prior years). Here, we will test for three devastating bee diseases in two bee species to evaluate the health of bees on specialty crop farms in Virginia. The three diseases are all associated with debilitating impact on honeybees. They are: 1) Nosema ceranae, 2) Nosema apis and 3) Sacbrood virus. Disease positive bees (100) will also be screened for genetic variants of N. ceranae since some variants are more likely to cause harm than others. Pollen from 100 berry flowers will also be tested for disease. Results will prove informative for honeybee health, the potential for transmission across crops, and for decisions regarding future use of mason bees on farms
- The Virginia Tech University will determine how soil applied organic fertilizers derived from multiple organic waste streams support the development of beneficial plant growth promoting microorganisms in three representative apple orchard ecosystems relevant to Virginia stakeholders. Profits and competitiveness of these orchards depend on high biomass accumulation, sustainable fruit quality, and fruit yield. In addition, the first three to five years of establishment are critical for the orchard for subsequent years. During this period high rates of high cost and environmentally mobile synthetic fertilizers are applied. There is thus a need to reduce monetary costs, increase plant yield, support longer-term orchard health, and support environmentally friendly management practices of orchards systems

Based on the latest Agricultural and Research Extension Center survey, this research is supported by tree fruit farmers. Stakeholders understood that best agricultural practices related to orchard management and profitability were driven by robust research and science. The survey also indicated strong support for conservation practices that sustain the environment. The research is thus supported by the orchard industry because of its potential to sustainably increase efficiency, profitability, product competitiveness, orchard health, and environmental stewardship across the state.

The broad goal and outcomes of the research is to develop sustainable best management practices in support of grower economics, healthy soils, plant-microbial interactions, and lower environmental costs to society. The main task of the proposal will thus focus on describing the plant-microbial interactions in soil with different alternative organic and synthetic fertilizer practices, and to communicate these findings to stakeholders.

- Virginia Tech will raise and release a parasite of brown marmorated stink bug eggs to promote and enhance biological control of this invasive stink bug in Virginia. Initial outcomes expected are the broad establishment of this biological control agent in Virginia, followed longer term by measureable impacts on brown marmorated stink bug populations. This parasite, Trissolcus japonicus, was detected in northern Virginia 2015 and 2016, in several other Mid-Atlantic States between 2014 and 2016, and its redistribution in Virginia has been approved by the Virginia Department of Agriculture and Consumer Services. T. japonicus will be reared in the laboratory and released at multiple locations in Virginia known to have high brown marmorated stink bug populations, including tree fruit and soybean production regions. Post-release monitoring of its establishment at the release sites will be conducted.
- The ApiSolutions Consortium will provide training, education and other supportive resources to Virginia beekeeper honey farmers in order to improve their knowledge, skills and abilities in techniques for the production, processing, packaging, and marketing of honey as a high quality, profitable and valuable specialty crop safe from pathogens or adulteration. The project also seeks to increase the number of new beekeeper honey farmers going into specialty crop production in Virginia. The major tasks include 1) a series of hands on educational workshops held throughout the State; 2) a multi session specialty educational tract focused on Excellence in Honey and Hive Product preparation at the Eastern Apicultural Society's annual summer conference hosted in Hampton, Virginia in 2018; 3) the development of a website with educational and other resources, and 4) the production of an educational brochure on preparation and marketing of honey and other value added hive products available to honey farmers and other programs of the Virginia Department of Agriculture such as the Food Safety and Security. The project will be self-sustaining by utilizing a knowledge transfer/train-the-trainer approach.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.

Washington

Amount Awarded:

\$4,110,091.28

Number of Projects:

21

- Washington's strawberry industry predominantly produces fruit for the processing market, which has been in decline for the last 30 years. Meanwhile, consumption and value of fresh strawberries continues to increase nationwide. Washington producers have an opportunity to meet the growing demand for fresh local strawberries, but face several obstacles in doing so. Researchers at Washington State University (WSU) will address these barriers through plant breeding research, evaluation of horticultural practices, grower outreach, and plant propagation research for nursery expansion. Traditional breeding methods and molecular markers have resulted in a number of promising perpetual-flowering advanced selections from WSU and collaborators in OR and BC. These advanced selections will be trialed with standard commercial cultivars to examine their potential to have long seasons, high yields, and outstanding fruit quality for regional growers. The research in horticultural practices will focus on biodegradable mulching films (BDMs), which show promise in reducing field work and disposal expenses compared to polyethylene mulch. This project proposes to evaluate the mulching efficacy of available BDMs in establishment, overwintering, and spring and summer production of perpetual-flowering fresh-market strawberries. Thirdly, growers will be reached through a survey of their knowledge gaps and marketing needs, and also through two grower workshops sharing information on best production practices, postharvest handling, and marketing techniques of fresh market strawberries. Finally, three propagation methods will be examined for their impact on commercial field performance of fresh strawberry, which will help expand the capacity of nurseries that support the fresh market strawberry industry.
- In this project, the Washington Hop Commission and its USDA researcher partner seek to develop and deliver a decision aid tool to improve management of hop powdery mildew on the variety Cascade, and similar varieties, which can improve growers' disease control efficiency. Cascade is the most widely planted variety in Washington because of its prominent role in many styles of craft beer, being used by over 4,000 breweries worldwide. Until 2013, the disease powdery mildew was not a serious issue on Cascade because of its inherent genetic resistance to the disease. However, new strains of the powdery mildew fungus specifically adapted to Cascade have emerged and spread through the Pacific Northwest. Growers are now forced to learn to manage powdery mildew on a variety widely planted throughout the industry, leading to an average of five fungicide applications a year on Cascade at an aggregate costs of over \$1 million annually to Washington producers. This proposed project will develop new knowledge, understanding, and approaches to efficiently and effectively mitigate the threat of powdery mildew on newly susceptible varieties where growers lack experience. This project will integrate and formalize risk factors for powdery mildew into an intuitive, easy-to-use decision aid. The tool will be linked to forecasted weather data and pushed to users to ensure its utility and accessibility. In doing this, we will explicitly address documented industry needs for new decision aids, best management practices, and commercial- scale implementation of research.
- This project, submitted by Washington State University, aims to develop strategies for a sustainable management of gray mold, a major pre- and postharvest disease of apple and pear, two major specialty crops (annual farm gate value > \$3 billion) in Washington State. We specifically propose to (1) determine the sources of inoculum and critical timing of fruit infection, (2) conduct a statewide resistance monitoring to all fungicides used pre- and postharvest, (3) determine the genetic structure of the gray mold fungus (*Botrytis*) and how it impacts pathogenicity and sensitivity to fungicides, and (4) develop efficient management programs to enhance gray mold control and alleviate resistance problems. To achieve these objectives, we propose to conduct research in multiple orchards and different weather conditions to determine the critical timing of fruit infection. We will collect different *Botrytis* populations at different growth stages to evaluate the impact of weather conditions (overwintered vs. summer vs. storage populations), growth stage (flowers vs. fruit) and pesticide usage (organic vs. conventional) on the *Botrytis* population structure and test them for resistance to fungicides using standard lab and novel molecular biology techniques. Findings from these objectives will help design and assess different rotations and tank-mixture of existing fungicides preharvest and determine their impact on gray mold development postharvest. Expected outcomes from this study include timed and targeted fungicide sprays to enhance gray mold control and scientifically-based recommendations relying on the exact causal species of the disease and real-time occurrence and distribution of resistance to all fungicides.
- Washington State University will address the 2017 "control pests and diseases" WSDA SCBG funding priority by developing information that will allow peony cut flower growers to optimize their postharvest *Botrytis* disease control and handling of flowers. This will be done by identifying when infection of flowers occurs, developing effective postharvest *Botrytis* control measures, and determining optimal storage temperatures to prolong storage, reduce *Botrytis* and maximize vase life. The results from this project will be shared with growers via annual research updates at grower meetings, publication of articles in grower publications and through the development of a fact sheet on the handling and storage of peony flowers.

- Researchers in the Department of Horticulture at Washington State University are investigating the efficacy of various crop enhancement products for potato and are developing novel plant growth regulator-based techniques to manipulate tuber size distribution and shape to enhance the yield and quality of raw product for frozen processing. The crop enhancement product research is designed to provide growers with data that will inform decisions for adopting products for which credible efficacy data is lacking. Cost/benefit analysis will demonstrate the effects of these products on profitability. Plant growth regulators are being investigated for their potential use in mitigating various weaknesses that affect the yield and quality of frozen processing varieties. These weaknesses include delayed plant establishment, low tuber set, overly large tubers, and round tuber shape. Tuber size and shape interact to affect yield of usable raw product (French fries) versus waste for frozen processing. Preliminary work has demonstrated potential in using low-dose applications of GA and NAA (plant hormones) to hasten emergence, elongate otherwise round tubers, and shift tuber size distribution to maximize the yield of raw product for frozen processing.
- Washington State is a major potato producer in the U.S. However, postharvest potato management is a challenge to stakeholders with bulk storage losses of about 6% (NPC, 2016; USDA/NASS, 2016). Several diseases affect potato quality during storage. Presently, managers' lack state-of-art sensing tools to detect and manage storage diseases at early stages. Existing methods involve periodic visible symptom monitoring, air sniffing for anomalies by personnel, plus sparse temperature probes for hot spot monitoring that are somewhat subjective, labor intensive, and inadequate. Thus, we propose to develop novel sensing technologies for early disease detection in bulk-stored potatoes. This will: 1) offer an unprecedented aid for growers to implement appropriate potato rot detection and management practices by manipulating temperature, humidity, and airflow to limit pathogen growth and development; and 2) help reduce the postharvest potato storage losses through early processing. The technology we develop can also be adapted for other specialty crops (e.g. onions) grown in the region. Specific objectives of this project are to investigate portable field asymmetric ion mobile spectrometry, chemosensor, and thermal infrared imaging based sensing modules for trace level volatile biomarkers and anomaly detection associated with potato rots. Our primary focus is on *Pythium leak* caused by *Pythium ultimum* var. *ultimum* (stramenopile –fungus like) and soft rot caused by *Pectobacterium carotovorum* subsp. *carotovorum* (bacterium), two predominant pathogens associated with potato storage losses. Research will be conducted using Russet Burbank, an industry standard variety for French fries, and Ranger Russet, most vulnerable variety to storage issues.
- Washington State University will lead and execute this project. Objectives are to test technologies for detecting fruit maturity, develop a protocol for harvesting fruit at optimal quality, develop an on-line database and website www.cider.wsu.edu for cider apples, including information on production, bloom and fruit habit, yield, and juice characteristics, and develop enterprise budgets for small, medium and large-scale orchards suitable for mechanical pruning and mechanical harvest. The cider program at WSU Mount Vernon NWREC is one of the most active in the U.S., has a cider research orchard of 70 cultivars, and has carried out studies demonstrating over-the-row mechanical harvest. To develop harvest metrics and protocol for optimum harvest, we will test a portable, non-destructive quality meter utilizing near infrared spectroscopy. To create an on-line cider cultivar database, we will collate long-term data plus data collected in this project for all cultivars grown at NWREC; by the end of this project we will have 6-16 years of data for each cultivar (long-term data is important to understand year-to-year variability). We will develop enterprise budgets for small-scale (10 acres or less), medium-scale (up to 25 acres), and large-scale (more than 50 acres) cider orchards. We will interview apple production specialists and experienced apple growers to determine fixed and variable costs; survey suppliers for costs of trees and other supplies and materials; determine the cost of harvest equipment by contacting equipment suppliers in the U.S. and Europe; and calculate the profit and break-even scenarios for each of the three orchard systems.
- Hops are very sensitive to drought and heat, and recent drought years have severely impacted hop yields in the state of Washington. This project is timely because climate predictions suggest that the number of days Washington's productive Yakima Valley could experience damaging drought and high temperatures could increase in the future, threatening growth in hop agriculture and a burgeoning craft brewing industry alike. Researchers from the USDA-ARS propose to study the physiological response of hop plants to drought and heat to identify existing varieties with increased water use efficiency. We will then compare gene expression patterns using next-generation sequencing techniques among drought/heat-tolerant varieties and drought/heat sensitive varieties to describe expression of abiotic stress response pathway genes in leaf tissue and expression of genes that respond directly to soil moisture in root tissue. From these data, we will be able to correlate gene expression patterns in the roots to gene expression patterns in the leaf, to the physiological response of the plant to drought/heat. Our objectives are to identify existing hop varieties with increased water use efficiency, to compare the physiological response of these varieties to drought/heat sensitive varieties, and to compare patterns in gene expression from the leaves and roots of these varieties to identify candidate genes for increased drought/heat tolerance. Our goal will be to identify candidate genes that can further be used for marker- assisted selection to eventually breed a more drought/heat tolerant hop variety.

- Specialty crop farmers commonly use animal manure nutrient to fertilize their soils. The bulkiness of manure, however, hampers this practice mostly because it has to be hauled from distant production regions. Manure use is also invariably plagued by several other concerns, including: inconsistencies and imbalances in nutrient contents, food safety issues from pathogens inherent in manure, and potential importation of weed seeds. Researchers from Washington State University are submitting this proposal to the Washington State Department of Agriculture to investigate the economic, agronomic, and food safety benefits of concentrating manure and associated compost via pelleting and blending with other locally available byproducts (e.g. canola and fish meals). Our central hypothesis is that pelleting will not only significantly concentrate these nutrients to allow for economic export to distant specialty crop production areas but will also provide adequate pathogen and weed seeds kill to enhance food safety and reduce the burden of importing noxious weeds to the receiving areas. We also postulate that blending of manure and associated with other locally available organic byproducts will provide a product with balanced and known nutrient levels to enhance precise application. To achieve this overall goal and to test the central hypothesis, the specific objectives are: (1) Determine optimal conditions for pelleting of manure and manure composts with/without supplemental fish and canola meals, (2) Evaluate effectiveness of the pellets versus other nutrient sources for specialty crop production and food safety issues, and (3). Disseminate the project results to pertinent stakeholders.
- The Washington Apple Commission seeks SCBGP funding to produce, film and translate into 7 languages a video showcasing the Washington apple industry for international consumers and trade members. The video will provide strong visuals of Washington's ideal growing conditions, state of the art technology and strict food safety practices to increase the knowledge of Washington's high quality apples among target consumers in Mexico and Central America, India, the Middle East, China, Taiwan, Vietnam and Indonesia. In addition, the video will contain information about the health benefits and optimal home care and handling practices to keep purchased Washington apples fresh and to ensure consumers have an enjoyable eating experience. The video will be composed of "vignettes" covering unique aspects of the growing, harvesting, packing and storing of Washington apples that can be used individually in social media communications and digital marketing applications, such as e-commerce promotions. As competition increases in Washington apple export markets, the ability to visually show why consumers should choose Washington apples is more critical than ever to the financial health of the 1,450 growers in the state. These growers collectively export roughly one-third of their harvest and depend on those exports to maintain stable and profitable returns to their orchards.
- The Washington State Wine Commission (WSWC) will develop an international wine education program for use in international target markets. The program will certify that members of the trade are knowledgeable about Washington State wine. Funding will cover the development of course materials and pilot sessions in five target markets. Uniquely, the program will emphasize education by partnering with culinary and professional wine training schools. Partnering with these schools will (1) engage new professionals at the beginning of their careers when they are most receptive, (2) ensure that the program is academically robust, and (3) reduce logistical costs. The WSWC will also use the education program to target current, influential trade in order to boost exports in the near-term. However, this will not significantly increase costs because the materials and certification systems that are developed for schools can be used for stand-alone sessions for current trade.
The project will result in the following outcomes: (1) expansion in the percentage of trade members in international markets that are knowledgeable about Washington State wine and can advocate for it, (2) increase in the volume of wine purchased by sommeliers and buyers who participate in the pilot sessions, (3) increase in the number of Washington State wineries supplying wine to the sommeliers and buyers who participate in the pilot sessions, and (4) higher demand for the specialty crop (wine grapes) by creating a business diversification opportunity and via expanded and sustainable markets for Washington State wine.
- The Washington asparagus industry is starting to increase production after a two decade decline in production. The industry has transformed itself from a low value, processed industry to a higher value fresh pack industry. There is a forecast of increased production over the next several years. The asparagus industry is starting a promotional campaign to educate Pacific Northwest consumers that there is a Washington asparagus season and that consumers should be buying Washington asparagus during April, May and June. We propose to hire a marketing firm to manage this campaign that would be focused on the metropolitan areas of Seattle, Portland, Spokane and Boise. Our goal is to get one of out of seven consumers to buy one more pound of asparagus the first year, two pounds the second year and three pounds the third year. If successful this effort would absorb 50% of the forecasted new production. (The industry assumes the other 47 states and Canada will take the remaining extra asparagus.) The Washington asparagus industry is very enthusiastic about this project and there is a high degree of support for this proposal.

- This is a three-year Training and Education project to expand Spanish-language educational, technical and horticultural information for farmworkers by the Washington State Fruit Commission (WSFC) using its magazine, Good Fruit Grower, a widely-respected publication with comprehensive print and digital platforms. The project seeks to provide information in Spanish to enhance workers' understanding and compliance with food safety rules, workplace safety, farm management, and best horticultural practices, and in doing so enhance overall competitiveness in the grower community. In partnership with industry individuals and organizations, WSFC will develop a library of videos and text that serve as tools to improve understanding and compliance with the Food Safety Modernization Act and other new regulations. The library will assist with understanding and utilization of new research on horticultural best practices; and help Spanish speakers better understand orchard safety information for topics such as pesticide management and tractor operation. Industry advisors will help develop topics deemed most essential to the audience and will advise on content creation to avoid duplication with any existing Spanish content elsewhere. WSFC/Good Fruit Grower will make this content available for sharing at no cost to industry companies and organizations. Content will be hosted on a permanent searchable dedicated Spanish language web site optimized for mobile devices, for sharing by readers and for printing. Self-assessment includes annual reader surveys and Google Analytics.
- The Washington Wine Industry Foundation (WWIF) serves Washington wine grape producers and processors by identifying industry challenges and bringing together partners to create innovative solutions. Vinewise® (vinewise.org) is one such solution—an online, interactive guide created by and for Washington State wine grape producers and processors to assess and improve the sustainability of their current viticulture and business management practices. Developed in 2002 by a team of producers, processors, specialists, and researchers, Vinewise® has been updated regularly; however with the exponential growth of Washington's grape and wine industry—which has seen a 58% grape production increase in seven years—producers are seeking more tools that address sustainability. A robust update is necessary to meet producers' needs.
- Viva Farms will improve and expand incubator models and their services, and enhance and develop local and regional markets to increase beginning and socially disadvantaged specialty crop producer success. Producers will achieve sustainable crop production by reducing inputs and cost, and increasing yields, net revenue and resource conservation all essential for viability. Consumer knowledge/access will be improved through education, promotion and increased access points which is key to growing consumption of specialty crops. Our project will effectively engage project partners, stakeholders and specialty crop beneficiaries and document and evaluate baseline and year over year performance measures of incubator models and participating beginning and socially disadvantaged specialty crop producers, and implement program and business plan improvements at Skagit and Sammamish Valley locations. In addition, our project will provide bilingual training, technical assistance and coordination of production planning, coordination for greenhouse propagation and management, crop management (soil prep, planting, irrigation, pest, weed and disease management practices), harvesting and post-harvesting practices, Organic and GAP certification, and aggregation, processing, marketing and distribution. Finally, our project will increase the number of markets and access points through outreach, promotion and education, and share our results, strategies and tools through workshops, presentations and online via Viva Farms and WSU websites. Local and regional specialty crop farms and other food businesses will experience enhanced competitiveness increasing revenue, number of rural and urban careers, number of jobs and new businesses maintained and created, and the number of new beginning and socially disadvantaged specialty crop producers.
- Washington State Department of Agriculture oversight
- Organic Seed Alliance (OSA) project objectives are: 1) facilitate market expansion of purple sprouting broccoli (PSB); 2) release and commercialize a new variety of organic PSB; 3) provide production recommendations and economic planning tools for PSB vegetable production; 4) provide information and publications on PSB seed production. Outcomes: 1) Increase sales of PSB, 2) increase production of PSB and PSB seed. General tasks: 1) field work to finish breeding and produce stock seed of a new organically bred variety of PSB; 2) conduct promotion and negotiate the commercial release of this new variety; 3) execution and support of two years of on-farm strip trials of PSB on farms in Jefferson, Skagit, King, Snohomish, and Clallam counties; 4) two years of succession planted trials at the OSA research farm to determine optimum planting time for PSB; 5) working with an agricultural economist to gather and summarize information from OSA trials and breeding work and on-farm strip trials to produce a production and economic planning guide for PSB; 7) writing and publishing a PSB seed production guide; 8) distributing surveys and hosting in-person and virtual focus sessions with produce wholesalers, retailers, farmers and chefs to determine knowledge and best practice needs for PSB harvesting, packaging, and marketing; and 9) developing a marketing campaign that includes social media, press promotion, coordinated store promotions, product demos in stores and at farmers markets, and delivering outreach at regional food and farming conferences.

- The Center for Produce Safety will partner with the University of California, Davis, to develop a novel antimicrobial plastic material that can be used in reusable plastic containers (RPC's) and as a liner in bins and totes. Sanitation of reusable plastic containers is a significant challenge and can lead to cross-contamination of fresh produce. These cross-contamination events can result in a foodborne disease outbreak as well as reduce the shelf life or quality of the product. To address this challenge, this proposed research is aimed at developing a rechargeable antimicrobial and anti-fouling plastic material and its evaluation for elimination of contamination of RPCs from various contaminating sources and reducing biofilm formation. The antimicrobial properties of this material can be recharged by simply using a diluted bleach solution. This novel material can be used as a rechargeable liner attached to existing RPCs and/or development of new RPCs with this novel plastic material. This novel material may also be used in combination with wooden bins. The proposed research plan will focus on *Listeria* as the target bacteria.

To complement laboratory-based research, the proposed research plan also evaluates field testing of this material in improving sanitation of RPCs in fresh produce processing facilities as well as evaluating any impact on produce quality with extended contact. In summary, this research proposal addresses a significant unmet need in the industry to improve sanitation of RPCs.

- Red raspberry growers are not currently able to make dairy manure compost applications to active plantings due to food safety concerns. These growers are experiencing decreasing soil quality, decreases in planting lifetimes, and increased costs due to more frequent replanting. The Washington State Department of Agriculture and Washington State University are currently conducting a project studying the food safety implications of regular, moderate dairy manure compost application (with both raw dairy manure and conventional fertilizer as controls) to red raspberry plantings. Applications are followed by testing of soil, leaves, and fruit for the presence of *Salmonella*, *L. monocytogenes*, and *E. Coli* O157:H7. Plant and soil health are being monitored to assess the effects of compost applications on soil quality and plant health. The first year of research is complete, with a second season happening this year. During the first year there were no detections of *E. coli* O157:H7 or *L. monocytogenes* in soil, fertilizer, foliar, or fruit samples for manure, compost, and conventional fertilizer treatments. There were some detections of *Salmonella* in soil in the manure treatment. There were no significant differences between treatments in plant growth or soil health. Continuing this research for a third year will confirm zoonotic pathogen testing results and makes it more likely that changes in soil and plant health (that take time to develop) will be observed. With data from this project, growers will be able to make evidence-based decisions on the risks and benefits of different fertilizer choices.
- This project is a partnership between the Washington State Department of Agriculture and the Washington Farm Bureau and aims to advance the marketing of local cut flowers. An integrated marketing campaign will raise general consumer awareness about the beauty and quality of locally grown flowers in Washington and engagement from the primary channels that local growers sell their flowers (florists, grocery, and farmers markets). Marketing collateral will be produced for farmers markets and their flower vendors. Another component is training to increase knowledge and familiarity of locally grown flowers for growers via peer-to-peer training and for farmers market managers on topics of local varieties, seasonality, quality, harvest stages, and assistance in best practices to grow the cut flower industry. The project will provide peer-to-peer technical assistance and grower networking connections to assist beginning flower growers meet industry quality standards and support business growth with business management tools. In addition, the general marketing and promotion campaign will raise the profile of Washington grown flowers which will provide benefits for all Washington cut flower growers and especially beginning farmers who often do not yet have the resources for extensive marketing of their products. Furthermore, this highly-collaborative project will engage with other organizations and industry experts to highlight Washington/Pacific Northwest Grown within a larger "American Grown" campaign. A professional caliber baseline consumer survey will inform B2B and consumer messaging and education strategies. Strategic integrated marketing campaign will utilize advertising, promotions, direct selling and events to build knowledge, brand awareness and equity and sales.

- More and more people admittedly do not have any connection to Washington's agricultural community. This divide results in confusion about who Washington's farmers are, what products they grow and what steps they take to ensure safe quality food for all. The purpose of the Washington Grown project is to provide a positive conduit to link consumers to Washington's specialty crop producers. The project will achieve this goal by providing an informational framework and platform encouraging people to increase their knowledge and trust of Washington's farmers and resulting in more people choosing Washington's specialty crops.

Specifically, the project will teach people what specialty crops are grown in Washington, where they can purchase these products, what nutritional benefits specialty crops provide and how they can fully utilize them in their meals and as part of their diet. The project will also provide a first-hand look at Washington's family farms. Each of these steps will indeed increase consumer's understanding of, and confidence in Washington's specialty crop farmers. As trust increases with those who have been exposed to the project, more people will look to purchase specialty crops.

Multiple specialty crop groups will partner to design and oversee the success of this endeavor. The Washington State Potato Commission will serve as the day-to-day point of contact for the project. Funding will be used to produce various video production elements that will promote Washington's specialty crops. The Washington Grown television series and associated video assets are also shared amongst all partnering groups.

West Virginia Department of Agriculture

Amount Awarded:	\$249,071.36	Number of Projects:	13
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- The West Virginia Maple Syrup Producers Association will host a southern syrup research symposium and syrup grading school to enhance production knowledge among West Virginia maple syrup producers. The West Virginia Department of Agriculture partner with the organization to address issues related to southern syrup production, shortened production cycles and develop a coordinated effort with other state producers in the southeast region with maple resources.
- The West Virginia Department of Agriculture will partner with at least 10 West Virginia value-added specialty crop growers, processors and/or producers to exhibit in two different retail markets targeting high end gift gourmet foods. The purpose of these events are to present a unified WV specialty crop presence to enhance brand recognition and develop additional retail avenues for increased sales.
- Growing carrots is not easy task in the hard, West Virginia clay soils. Using raised beds and better soils, qualified growers will take on the task of increasing the market of carrot varieties and sales in West Virginia through educational workshops about growing carrots, designing and constructing long lasting raised beds, healthy soils, low tunnels, disease, pest control, post-harvest handling, presentation and marketing with the help of the Capitol Conservation District. In West Virginia carrots are in high demand with local consumers and high end restaurants. When small farmers bring carrots to the farmer's market, they are sold out quickly if presented well. By working with local farmer's markets and business owners, the marketing and sales of the carrots will be completed through the Capitol Conservation District. Each grower will keep careful notes in journals about yields, crop failures, successes, growth, costs, soil amendments and pest issues. By carefully reviewing these journals we can create a program to improve and increase production of carrots for market in West Virginia and continue to bring high quality carrots to the consumers.
- The hope for food security in our county and state depends upon getting our youth excited about agriculture and learning how to grow their own food. Winfield Elementary School Teachers (WEST) and Putnam County Master Gardeners (PCMG) will ignite a passion in our youth for growing food for the school cafeteria. The WVU Extension Service will provide technical assistance. The SCBG grant will provide funding for the purchase of a high tunnel with raised beds for each grade level and the exceptional education department to use at Winfield Elementary School.
- The Mineral County WVU Extension Office, along with Master Gardeners and the Mineral County Development Center, will increase awareness and knowledge of horticulture, growing specialty crops, high tunnel production, and apple production by hosting educational workshops at the existing Master Gardener High Tunnel. The Mineral County Demonstration Garden will serve as an educational opportunity for the public to learn about basic gardening and high tunnel production for specialty crops.
- The Wayne County Schools will enhance premium local organic shiitake mushroom production and consumption by conducting educational campaigns that integrate production methods into school curriculum, educating students, parents, and farmers on nutritional benefits of shiitake mushrooms and creating innovative, model production facilities to be operated by high school agriculture programs in Wayne County.

- The rebranding of West Virginia Grown products (including value-added specialty crops) is a project managed by the West Virginia Department of Agriculture to benefit and update the existing program through initial specialty crop commodity specific materials and prototypes as well as a launch campaign blending traditional and social medias to create awareness, encourage industry usage and develop specialty crop “niches” to use the program as a marketing tool. Collateral materials, advertising campaigns and grower, processor and consumer education are all critical ingredients for this project’s success.
- The Grow Healthy WV Coordinator will be an employed by the West Virginia Department of Agriculture providing a much-needed resource for community and urban gardens. Staff will utilize their farming and non-profit management experience to develop a network of school, community, and urban gardens throughout the state. This network will provide education on developing a specialty crop industry that will provide healthy local foods in multiple programs to all demographics of West Virginians. The Coordinator along with others will work with growers and educators to both increase specialty crop yields and consumption. At this point, there is no network that provides information on where, who, and what crops are being grown on small scale farming operations. These sites have unlimited growing potential for specialty crops that can provide prescribed healthy foods to schools, institutions, and direct to consumer programs. With the aid of a state-wide coordinator developing programs so that growers can concentrate their efforts, sales outlets, crop diversity, season extension, and advance knowledge of biodiverse small scale farming. The Coordinator and staff will assist in developing programing, business development, planting/specialty crop selection designs, increasing capacity, increasing sales outlets and revenue, increasing consumption, creating prescription based CSA programs and building grower connections. Grow Healthy West Virginia will change the way we look at specialty crop production and consumption. Using bio-intensive techniques and diversity in crop production the community and urban gardens of West Virginia can better the health of our state while providing economic opportunities.
- The West Virginia Department of Agriculture will identify collaborators and partners to develop a mobile, smart phone based application designed specifically for buyer/seller connections of specialty crops in West Virginia and beyond. This grant, for the initial development, will provide 4 “layers” of interaction including chef/seller, institution (farm to school) and grower/consumer and one other layer for connection and transaction initiation. Once the initial platform has been created, additional connections, dataset installation and evolving technology tools to enhance the experience will be included.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Although told by many experts in the field that maple syrup production has an extremely high potential production capacity in the state, an accurate assessment and inventory of viable maple resources is needed to provide the education, best practices, management and boiling resources for those interested in investing in the future of maple syrup and its products. To do that, the West Virginia Department of Agriculture will partner with West Virginia University and Assistant Professor of Forest Resources Management at the Davis College of Agriculture to utilize GIS and other technologies to map the state’s areas of highest potential with an on the ground evaluation. At the conclusion of the project, regions and landowners will have data and information necessary to plan and develop maple plots with sufficient density and productivity to expand the amount of sap/syrup production in the state. This proposal funds the graduate student who will spearhead and complete the project.
- Food safety, particularly with the advent of the FSMA Produce Safety provisions, have brought the need for science based evidence in many realms of specialty crop production. As the rule implementation continues forward, the need for testing to provide the science based demanded data is critical. However, many laboratories are not familiar with specialty crop and value added specialty crop testing processes and procedures. Cooperating with other food laboratories in the state (i.e. West Virginia University, WV Division of Public Health) for verification, testing processes will be established for contamination, adulteration and purity for at least 3 specialty crops utilizing two specialized equipment in the ISO accredited WV Department of Agriculture laboratory.
- Expansion of viable markets that require a Good Agricultural Practices (GAP) audit for access provides a challenge in the beginning and start up phases of specialty crop production. Many times, growers have not sufficiently developed their business capacity to absorb the cost of this program. The GAP audit reimbursement program was developed (and succeeded) in expanding the number of GAP certified growers in the state. By combining the solid production and business training programs that have been the cornerstone of this expansion with the assistance of other ag service providers in the state (WV University, WV State, non-government organizations and grower clusters), continued cost share opportunities for new, beginner and expanding specialty crop producers will encourage growth and the availability of specialty crops in the marketplace grown in West Virginia.

Wisconsin

Amount Awarded:

\$1,182,496.95

Number of Projects:

16

- Dr. Amanda Gevens, Potato & Vegetable Disease Research and Extension Specialist, grower cooperators, and University of Wisconsin Extension county educators will 1) investigate hyperspectral imaging analyses for 'remotely sensing' early, asymptomatic infection of late blight in potato and tomato, 2) investigate biopesticide and other novel organic treatments for control of late blight in potato and tomato crops of Wisconsin, 3) communicate results of investigations to enhance adoption of novel integrated management practices through educational programming with potato and tomato growers of Wisconsin.
- The Ginseng Board of Wisconsin (GBW) serves 180 growers (30% from the Hmong community) and are facing a threat from a newly identified leaf blight (*Alter aria panax*) and fungicide-resistant leaf blight pathogens (*Alter aria alternata* and *Alter aria panax*) that cause crop defoliation, winterkill, reduced yields; control strategies and education can protect this valuable specialty crop.
- Dr. Ruth Genger and co-investigators Dr. Douglas Rouse and Dr. Julie Dawson will evaluate advanced potato breeding lines, heirloom potato varieties, and standard potato varieties for their suitability for organic production through trials under organic management, both on research station land and through participatory trials on organic farms, and will disseminate research findings through grower conferences, field days, and web-based information resources.
- Wisconsin Apple Growers Association (fiscal agent) and the Wisconsin Grape Growers Association will reduce crop pesticide sprays and crop loss by strategically installing a network of 20 weather stations, subscribing to the Network for Environment and Weather Applications, and training growers on the uses of the Network in crop and pest management.
- In collaboration with upper Midwest hops growers, extension agents, and faculty at the University of Wisconsin and Minnesota, Drs. Sara Patterson and Ruth Genger will 1) conduct grower surveys and make recommendations for best varieties for the upper Midwest, 2) develop new protocols to eliminate viral infections and provide sources of disease free hops, and 3) develop new web-based information resources and educational opportunities to exchange information and disseminate research findings.
- The University of Wisconsin will evaluate cold hardiness of dormant grapevine to determine bud freezing tolerance from fall to spring of cold-hardy grape cultivars grown in Wisconsin, in addition assessment of the chilling requirement to break dormancy and the impact of cultural practices and agricultural products to delay bud break will be evaluated. Results will be disseminated to grape growers and winemakers through grower meetings held at summer field days, winter meetings, grower spring schools, and through UW Wisconsin Fruit newsletter and website articles.
- The Gratton Lab at the University of Wisconsin-Madison will conduct an assessment of Wisconsin specialty crops for their dependence on bee pollinators, and their subsequent vulnerability to declines in both managed and wild bees, and will disseminate results to grower, academic, and agency audiences through outreach and scientific presentations.
- Plovgh Inc. will leverage its supply chain development expertise to expand production and sales of heirloom dry beans in Wisconsin by trialing new and existing bean varieties for regional adaptation, engaging local culinary professionals and potential buyers in variety evaluation, contracting with local farmers to produce outstanding varieties for consumption and for seed, and developing marketing channels that return maximum value to the farmer.
- The University of Wisconsin will assess the use of repellents against social wasps, will combine identified attractants and repellents in a push-pull strategy to sustainably manage social wasps in Wisconsin vineyards, and provide new recommendations for managing social wasps to Wisconsin grape growers.
- The University of Wisconsin-Madison will develop and implement innovative and integrated weed management systems in carrot production that will improve grower economic solvency in Wisconsin, where one third of the nation's processing carrots are grown.
- The USDA Cranberry Entomology Lab (Steffan Lab) will create a bio-insecticide for early season (bloom time) control of key cranberry pests, which will be accomplished by mass-producing native Wisconsin nematodes known to be highly virulent against key cranberry pests, while being innocuous to foraging pollinators.
- The Fermentation Sciences Program at the University of Wisconsin-Madison, in partnership with the Wisconsin Winery Association and the Wisconsin Grape Growers Association, will apply science-based tools to evaluate Petite Pearl wine production and develop a related digital publication for Wisconsin wine producers.
- Wisconsin Department of Agriculture, Trade and Consumer Protection oversight

- **Project Issue, Problem, or Need:** Distributors and retailers who purchase fruits and vegetables from growers often require those growers to obtain GAP/GHP certification. Further, following GAP/GHP standards can lead to reduced risk of food-borne disease. However, the cost of obtaining certification can be prohibitive for some growers. The purpose of this project is to elevate the marketability and safety of Wisconsin fruits and vegetables by making certification more affordable for individual growers.

Project Objectives: To make third party food safety audits (GAP/GHP) available to small and medium-size Wisconsin producers, many of whom would not have the resources to pay full cost of the audit. GAP/GHP Certification provides increased marketing opportunities. Meeting GAP/GHP certification requirements also reduces the risk of food-borne illness.

- The Gratton Lab at the University of Wisconsin-Madison will develop a better understanding of the interactions between honey bee hive conditions, hive management, foraging habitat availability, and climate to create a foundation for science-based hive management for Wisconsin beekeepers to improve year-round success of honey bee hives, and will disseminate results to stakeholders through association meetings and online and printable materials.
- Two major Wisconsin cut flower crops for growers and retail shops are sunflowers and zinnias, flowers that are often attacked by a complex mix of fungal and bacterial diseases. Field grown plants are always at risk of diseases during prolonged warm, wet and humid period of the summer when foliage can stay wet for many hours. Growers of these flowers would benefit greatly from a crop with heightened defense responses resulting in increased salable material and retailers would benefit from increased vase life post-harvest that would provide an increase of time for sale of their product. Extending the growing season with a hoop house could add 6 weeks or more of production and offer flowers on the market earlier than others thus filling a market niche and increasing grower income.

Therefore our proposal is to initiate a 2-year study:

- 1) The first facet of our proposal is evaluate the effectiveness of methyl jasmonate (MeJA) on reducing the effects of fungal and bacterial diseases in these crops in two environments: inside a hoop house and outside in the field, at two locations in the state.
- 2) The second facet of this project will be to evaluate the effectiveness of MeJA on increasing post-harvest vase life of various sunflower and zinnia cultivars grown under the aforementioned treatments.
- 3) The third facet of our proposal is to directly present results of the study to the growers, to industry, and to the public through various garden tours and field days given during the growing season. Further, off-station opportunities such as The Madison Garden Expo and Wisconsin Farm Technology Days will create awareness of the research to a wider audience.
- 4) The fourth facet of our proposal is to disseminate our research information via maintaining a Facebook page and website where information garnered from the trials will be posted, thus providing a valuable resource to growers. A fact sheet will be produced that will be easy to follow and distribute.

Wyoming Department of Agriculture

Amount Awarded:	\$297,955.68	Number of Projects:	13
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- The University of Wyoming Laramie County Extension will host "The Wyoming Bee College conference" that is open to everyone interested in the health, welfare and habitat development of honeybees, native bees and pollinator insects. The once a year two-day five-track conference over the course of next three years will help develop conscientious beekeepers, and create awareness of value added products from the hive and encourage people to plant more habitat for bees.
- The University of Wyoming will work towards the development of new table and wine grape germplasm/cultivars by using advanced breeding techniques and disseminate results to stakeholders at field days and conferences.
- Family & Consumer Sciences and Plant Sciences researchers from the University of Wyoming will introduce nuña beans to growers and consumers in the state as an alternative dry bean market class and nutritious source of protein and dietary fiber, evaluate consumer perception of sensory qualities, measure growing characteristics, and evaluate advanced breeding lines of nuña beans for popping characteristics and desirable agronomic characteristics of the Wyoming growing environment. Consumer introduction and response to nuña popping beans will be evaluated via descriptive sensory analysis and consumer acceptance testing. Concurrently, available lines of nuña beans will be grown and tested for potential use as a specialty crop in WY. Project outcome data will be disseminated through refereed journal articles in national and international nutrition and plant sciences journals, abstract presentations, the UW website, diverse media, and other educational outlets (including UW Extension, the Wyoming Master Gardeners program, and the Wyoming Farmers' Marketing Association).

- The University of Wyoming will enhance horticultural crop production in Wyoming by demonstrating two methods of growing at least five specialty cut flower species in a greenhouse and two high tunnels over a period of two calendar years. Cut flowers will be grown year-round in the greenhouse and late spring through late fall in the high tunnels. Plants will be either pinched (to encourage branching) or un-pinched. Stem lengths and days to harvest will be recorded for all plants. Results of the two-year study will be disseminated to stakeholders via field days, UW Experiment Station field days bulletins, presentations at the Rocky Mountain Green Industry Conference, blogs, the UW Extension Facebook page, and Twitter. We will show successful production of at least five types of cut flowers are feasible. We will also show differences in stem lengths and days to harvest between the greenhouse and two high tunnels.
- Collaborators at the University of Wyoming and USDA-ARS (Fort Collins, CO) will identify historic apple trees from farms, ranches, and orchards throughout Wyoming to determine which cultivars thrive in harsh Wyoming conditions. The identities of these cultivars will be made public so that specialty crop producers can plant and provide local apple products.
- The University of Wyoming will determine the suitability of chickpea, lentil, guar, and dry pea for dryland agriculture in southeast Wyoming by evaluating crop yield potential and disseminate research results to growers at field days, grower meetings, extension bulletins, and other activities.
- Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.
- Department of Plant Sciences, University of Wyoming will partner with the University of Wyoming ACRES Student Farm and Northwest College in Powell to work toward establishing and easy access to locally grown hops (*Humulus lupulus*, L.) in Wyoming. The project will identify hops varieties most suitable for high altitude climate as in the Laramie Valley and training both producers and university students on appropriate hops growing technologies and cultural practices. A series of growers' workshops, Agriculture Experiment Station Field Days, the UW online 4000-level course elective on hops production and training two undergraduate interns are proposed. During the course of the grant duration PI and Collaborators will establish demonstration site in Laramie, WY, carry on monitoring of hops established in Powell WY in 2015 and disseminate the outcomes to the public through outreach, extension and education. The project goals are to assist in establishing new hops growing operations in the Laramie Valley and Bighorn Basin by providing information on most suitable varieties, cultural practices and a tested source of cloned material.
- A one-stop, user-friendly publication on beginning fruit and vegetable production in Wyoming will be created by University of Wyoming Extension will increase the knowledge of beginning producers on common issues in the state and techniques and strategies to overcome them.
- The Sheridan College campus of Northern Wyoming Community College District will compare the benefits of using a mycorrhizae inoculant in the establishment of an educational orchard. The orchard will be used for instruction in a variety of agroecology and horticulture courses and for public educational activities, including workshops and tours that will demonstrate how to grow, maintain and harvest fruit in Sheridan, WY. The overall goal for this project is to demonstrate that fruit production is a viable endeavor for the Sheridan, WY area.
- The University of Wyoming (Wyo. Agr. Exp. Station.) project team expects to increase dry bean grower profitability and to reduce dry bean's environmental impact by identifying lines with high water and fertilizer use efficiency. To accomplish this, the team includes a legume breeding assistant (A. Homer) and a crop physiologist (J. Heitholt) that will grow our recently-generated experimental lines under deficit irrigation and limited soil fertility. Expected outcomes include new lines for Wyoming producers to use in deficit irrigation and/or low N situations or possibly organic applications.
- The University of Wyoming Extension Service will educate individuals through hands on workshops on the construction and use of low cost season extension high tunnels for weather sensitive specialty crops focusing on nonprofit organizations educational institutions and the Wind River Indian Reservation. Workshop participants will be surveyed to gauge knowledge gained on construction of high tunnels, use of high tunnels; and record the number that will use the knowledge gained to produce or expand production of specialty crops in the future.
- The Wyoming Department of Agriculture will survey producers, retailer, wholesalers and Ag organizations to determine which producers, handlers and processors will need training to comply with the new Food Modernization Act. Once identified required trainings will be offered for compliance. Workshop participants will be surveyed pre and post trainings to gauge knowledge gained on food safety to produce, handle or process specialty crops in Wyoming.